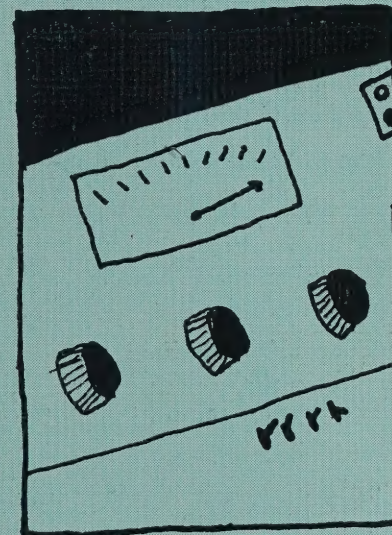
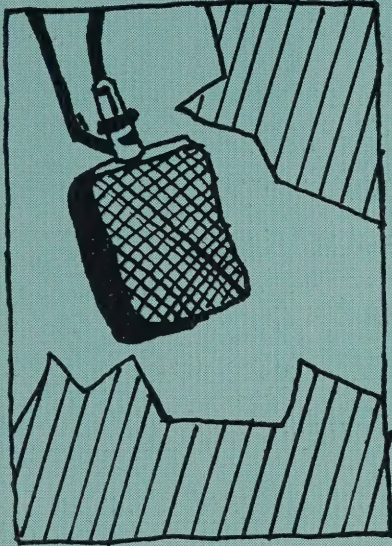
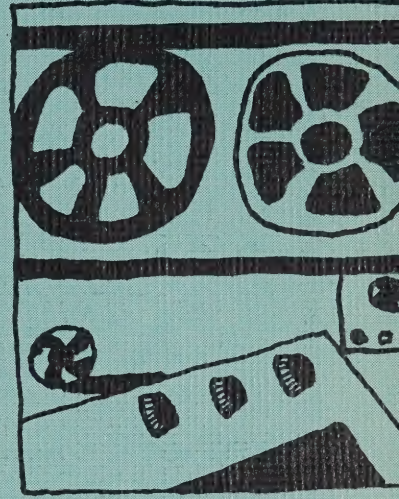


JOURNAL OF COLLEGE RADIO

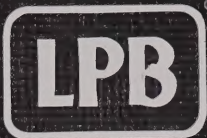
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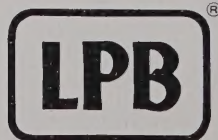
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December—January

VOL. 9, NO. 4

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JOURNAL OF COLLEGE RADIO

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The Journal of College Radio is published monthly except January, May, June, July, and August at the University of Southern Mississippi, Hattiesburg, for the Intercollegiate Broadcasting System, Inc. (a non-profit-organization), 2005 Industrial Bank Bldg., Providence, R.I. 02903.

The Journal of College Radio was founded in 1941 by the Intercollegiate Broadcasting System, Inc., using the title IBS Bulletin. The name was changed in 1955 to IBS Newsletter. In 1964 it became College Radio and in 1969, The Journal of College Radio.

Annual subscription price is \$5.00. Single copy price \$1.00, and the Annual published in October, \$2.00. Outside the U.S.A. add \$1.00 per year for postage. Single copies, add 25 cents. Back issues when available, are \$1.00. Reprint cost given on request.

Send subscription order and change of addresses to: Circulation, The Journal of College Radio, Department of Communication, University of Southern Mississippi, Hattiesburg, Mississippi 39401. On changes please include both old and new address plus address label from back of Journal if possible.

Second-class postage paid at Hattiesburg, Mississippi 39401. Printed by The Printing Center, University of Southern Mississippi, Hattiesburg, Mississippi, U.S.A. Copyright 1971 by IBS, Inc.

PUBLISHER'S REPORT

JACK DESKIN

This month's discussion is centered on the Federal Trade Commission Hearings on modern advertising practices. Most of the information contained herein must be attributed to the "Washington Report" of the American Advertising Federation.

The Federal Trade Commission opened its inquiry into the effects of advertising on American Society on October 20. The hearings are slated to cover all aspects of the industry, including market research, commercial preparation, the role of the media and children's advertising.

According to the commission, the inquiry is not aimed at any specific ads, but is for the purpose of "building a body of information concerning the response to commercial messages in television and other media."

The FTC said that the primary objectives of the hearings are to discover:

- Does advertising exploit fears, desires and anxieties?
- Do the technical aspects of TV commercials facilitate deception?
- Should there be special standards for advertising directed to children?

Following is a synopsis of the remarks of the first group of speakers as compiled by the AAF.

Rep. John D. Dingell, Chairman of the House Small Business Committee: We are being increasingly exposed to issue oriented advertisements placed in the printed and electronic media by both large manufacturers and powerful vested interest groups. The concept of "image building" is apparently being extended into the area of "issue promotion" and this could have dire implications for our entire process of government. Television advertising needs to be scrutinized most carefully...television viewers are essentially a captive TV

audience since TV commercials don't provide the "small print" found in some other types of advertising. Extravagant claims are left to stand. You can say that these claims will fall in the marketplace. However, much damage is done to consumers first.

Rep. Louis Frey, member of the House Interstate and Foreign Commerce Committee: Understanding what the ordinary American thinks does not come easily to those who see ads through the distorting prisms of living and working in Washington. The average FTC commissioner sees an ad through a filter composed of equal parts lawyer and Washington. The average consumer simply sees ads. We should protect consumers as much as necessary, but no more, lest we strait-jacket advertisers in a web of government regulation which can only stifle the creativity that makes them so intriguing.

Stephen A. Greyser, Associate Professor, Harvard: Assessments of advertising, particularly its social aspects, have deep ideological roots and conclusions are linked to subjective value judgements about how the marketplace works and what kind of a society ours should be. Advertising cannot be viewed in isolation—it is only one of the forms of marketing communications and only one of the elements of the marketing mix. However, strongly the social impacts of advertising are questioned, we should not forget its many economic contributions as a lubricant of commerce—which even many of its critics concede it performs well and with generally beneficial results. To separate the persuasive aspects of advertising from the informative is a false dichotomy, since the purpose of all advertising is to influence thinking or buying. Persuasion is deeply ingrained in our

(Continued on next page)

Publisher's Report

(Continued from previous page)

free society. Short of the marketplace itself, it is hard to envision, other than in matters of health and safety, a workable democratic way for deciding what should and shouldn't be advertised. We must separate our judgements of advertising's power and capabilities from our assessments of the rights and wrongs of that power.

Warren Braren, Associate Director, Consumers Union: Penetration is what advertising today is all about. Through advertising, companies enjoy almost a virtual monopoly on the kind of information available to consumers. Consumers are not exposed to contrasting viewpoints and are deprived of the diversity of opinion necessary for informed choices. This imbalance puts human and social interest second to private and political interests.

Howard H. Bell, President, AAF: Advertising is often equated with big business, but a substantial portion of advertising is local--on behalf of small businesses. Retailers rely on advertising to compete in the local marketplace. A new business can only gain a foothold in the marketplace

through advertising and an established business cannot compete without it. The FTC should establish an industry advisory committee to maintain a continuing dialogue and to provide a conduit for information and concerns to flow back to industry.

John Crichton, President, American Association of Advertising Agencies: Advertising is anything but a monolithic business. There is a great diversity of opinion about techniques and results--about the kind of advertising which works best--and about measurements of effect. Criticism which suggests hampering the advertising function should not be implemented without unbiased and thorough analysis--and criticism arising from philosophy or personal bias should be particularly suspect.

Comments were made by many other leaders in marketing, government, and consumer interest. These hearings will continue for several more weeks. Charles E. Overholser, Senior Vice President of Young & Rubicam sums up the problem "Market research is an inexact science--we can make mistakes."

IBS

FCC Proposes Minimum FM Operating Schedule

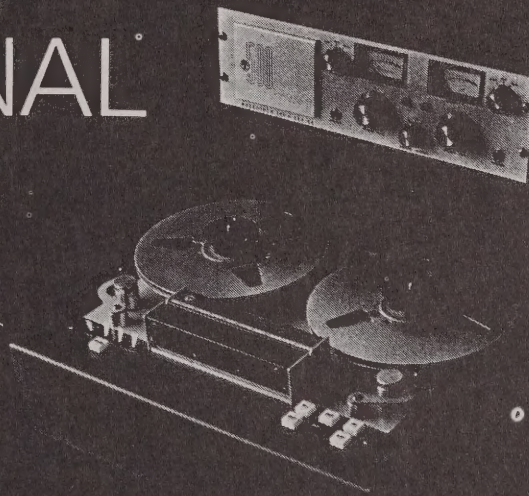
The Federal Communications Commission has proposed new rulemaking which would require FM stations to maintain a minimum operating schedule of at least four hours between 6 a.m. and 6 p.m., local time, and at least eight hours between 6 p.m. and midnight, local time, each day of the week except Sunday.

At present, FM stations are required to provide a minimum of 36 hours per week during the hours 6 a.m. to midnight, consisting of not less than five hours in any one day, except Sunday.

In proposing the change, the Commission pointed out that even though FM has become "economically more viable" a number of stations are operating at or near the minimum level permitted under the rule. The Commission said that when there are needs for more aural service in many, "this appears hardly consistent with the public interest." To the extent that FM and unlimited AM are alike, the Commission said, "it would appear that the same standard should apply in both instances."

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WMMR NEWS

By Larry Davenport
News Director, WMMR Radio

Attempting to cover news for a college station with a wholly volunteer staff can be a trying if not seemingly impossible experience.

How can a news director for a station with limited resources and virtually unlimited demands on staff time cover news fully and completely for his audience? What should the station stress, and, most specifically, what should a carrier-current, as opposed to an open-air operation, stress?

First, of course, the limitations and advantages of radio news over print journalism should be mentioned. The radio station usually has neither the time nor the facilities needed to do a great deal of in-depth reporting, as the campus newspaper can. However, the station does have the obvious advantage of immediacy in its coverage. Because of the characteristics of each, perhaps the first thing to remember is that the college paper and carrier current radio station need not be in competition with each other...at least not on a dog-eat-dog basis.

Once that's established, the question can be asked: What is the audience the station is serving, and how can it best be served in news coverage by the radio news-casts?

The carrier-current station here has a unique advantage over open-air stations. It knows who its audience is.

Breakdowns of dorm audiences are often available from the university administration, and if not, at least the station knows that all of those listening are students at the given institution.

Getting in close is essential for good quality audio if a feed is not available. The reporter in the striped hat to the left of the speaker is a WMMR reporter at a Peace Action Day Rally.



DEVELOPS ALL VOLUNTEER STAFF OPERATION

How does that affect considerations concerning news coverage for the station? Well, for one thing, some events, such as a small dorm fire, which might not be of interest to a general audience, become of prime importance to the carrier-current station's listeners.

How much, then, should news coverage be directed toward what the station's management perceives to be the needs of the audience? And stress that word—perceives. Perceptions of the wants and needs of a college audience can be misleading. One perception, however, which might be valid in a general situation is that college papers and radio stations should stress college-oriented news. They're in a unique position to do so, and indeed, are the only media interested in providing information of this type to the student audience.

Take a representative station as an example, to illustrate some of these considerations. WMMR Radio on the University of Minnesota's Minneapolis campus serves a dormitory audience of about 7,000 out of a student body population of around 50,000.

A former News Director of WMMR, Kathie Kertz, now with WCCO-TV, once said news coverage for a dormitory audience should stress campus-related news, and, in addition, the "Three D's—Draft, Drugs, and Demonstrations." Students though, don't live in a vacuum. They're affected by events in the city and state around them, as well as by national decisions.

Therefore, WMMR carries ABC network newscasts on a staggered schedule throughout the day on the half-hour. The use of the network frees the 21 man news staff from the chore of "ripping and reading" national news from the station's AP radio-wire. The staff is then free to cover and prepare newscasts focusing on state, municipal, and campus news.

This information is presented 10 times daily, on the hour, in five minute news-

casts.

Often, carrier-current stations have difficulty staffing any kind of a worthwhile news operation. Too often, if there's any kind of information presented at all, it comes "rip and read" from the teletype, or worse yet, is read directly from the campus paper. How then, can a news director interest more people in getting out and doing the day-to-day slogging through meetings and so on that lets the station "cover" news as opposed to "reading" it?

Training, excitement, and professionalism must all be combined in the newscasts of a college station. Without any of these elements the coverage will suffer.

Many, if not most, college stations, of course, are designed to aid in the training of speech, broadcasting, and journalism majors. At WMMR, that on-the-job training is expanded to informal seminars and bull sessions held off campus in which professionals from the local media are invited to speak with staff members and exchange ideas. The station, in addition, runs a formal training program managed by senior staff members and by a graduate teaching assistant assigned to the station from the University's Department of Speech, Communications, and Theatre Arts.

This training function is essential to destroy the "toy radio" image that many college stations have acquired.

Excitement, or some sort of esprit-de-corps is also important. In any kind of a volunteer organization, staff members must get some kind of return for their efforts or they'll give up. If, like at WMMR, the station can't afford to pay the staff, or if the college administration won't offer credit for working at the station on a blanket basis, then the station must pay its members through excitement, pride, fun, or a sense of a job being well done.

One way to increase pride in a station

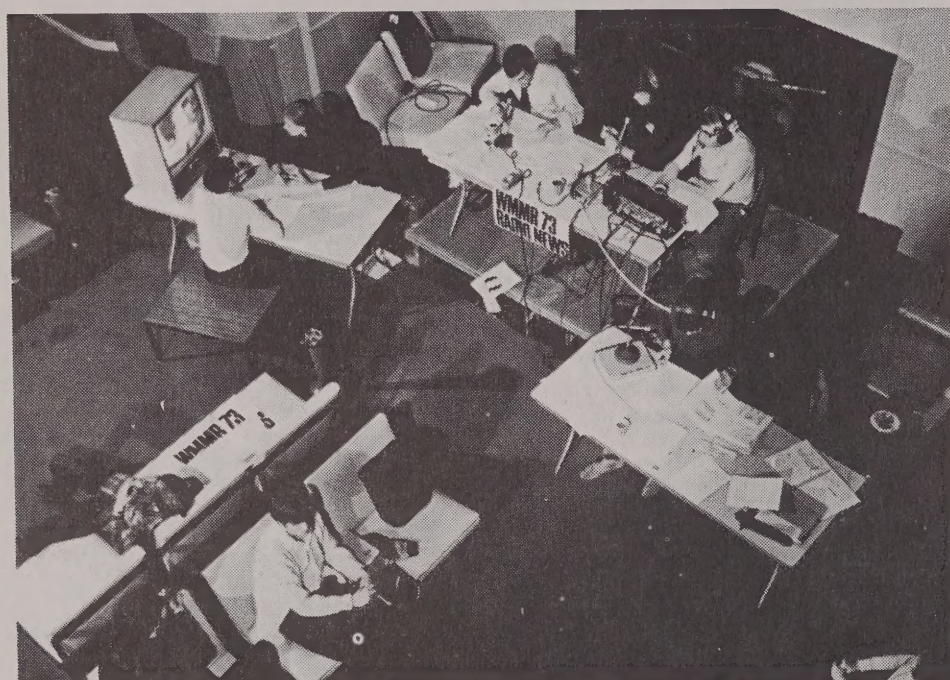


Interviewing important figures can add prestige to the volunteer job. A WMMR reporter, Cindy Morin, speaks with U. S. Congressman Donald Fraser.

(Continued on next page)



WMMR staff members participate with members of the local media. . . The two girls sitting on this panel with local media members are Judy Steen (l), and Debbie Kukielka.



During the 1970 elections, WMMR sponsored an election "party" in the Student union main lounge for dorm audience members. "Election Central" in the lounge boasted an engineer, three announcers and several writers.



Instead of just "rip and reading," getting out and covering a story adds interest for staff members involved in volunteer coverage. Here, the reporter on the right (standing, tape recorder) is from WMMR and covering a speech by activist priest Father James Groppi.

and to make it more worthwhile to work there is to increase the professionalism of the news staffs sound. This can be done in a number of ways. First, make sure the training program is a good, solid one.

Second, make sure staff members are encouraged to re-write and improve on wire copy. In addition, encourage them to grab a recorder and actually get out there into the world of reporting. Then, encourage them to dig for stories. Material discovered by a college staff can often be fed to other stations, or to the local wire-service bureaus.

WMMR has fed stories to the Associated Press (and had them used), as well as to several local professional stations and to over twenty college stations across the country.

It's perhaps axiomatic that the larger the audience that hears a news story the fledgling reporter has written, the larger the pride he has in the sense of accomplishment and the more likely he is to be eager to go out and cover that student association meeting the next night. This kind of professional pride can snowball and provide a station with good working relationships with local members of the media. At a recent press conference, a Minneapolis resident asked a WMMR reporter, "Just what is WMMR? Where is it?" (questions like this and a lack of identity can often be a problem for a carrier current station.) A reporter from a local radio station stepped in of his own volition to say, "WMMR? They're over at the University...they've fed us a lot of good stories." This kind of recognition from the local media cannot be overemphasized as important in developing staff pride, and, in addition, in developing contacts for staff members soon to be graduated into the broadcast job market.

A word of caution, though. Be careful what staff members feed to the local stations. If the stories being fed aren't well written...if the audio cuts aren't well produced...if the stories are unimportant, all that will happen is the local broadcasts will be alienated and will lose respect for your operation...to everyone's detriment.

Insist your reporters use audio cuts in every newscast. Don't tell the audience what Mr. Jones said, but have Mr. Jones tell the audience himself. Establish a format and stick to it for professionalism.

These then, are the keys to a successful carrier-current volunteer staff news operation: excitement, professionalism, and training. Those three, and the station will be in the position where the audience will tune to its spot on the dial not just for music, but for information.

NPR Funded \$3 Million By CPB

National Public Radio, the country's five-month-old, nationwide, non-commercial radio network, has received \$3 million from CPB to help finance its operations in 1972.

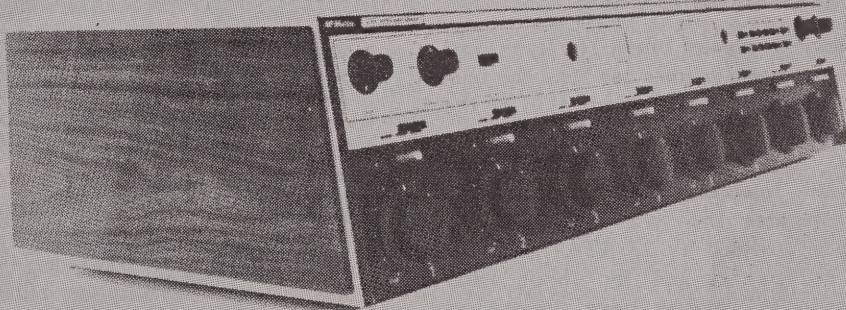
Since its inaugural broadcast on May 3, NPR has welcomed 15 new member stations and vastly expanded its programming. It now has 97 members operating 114 stations in 91 cities in 34 states, the District of Columbia and Puerto Rico.

Its program offerings, which have been

well received by both the critics and the public, range from its nightly news and public affairs program, "All Things Considered..." to live broadcasts of guest speakers at the National Press Club, live and complete coverage of important Congressional hearings, and a Network Tapes service which distributes high quality music programs and programs in stereo.

NPR regional offices have been opened in San Francisco and Atlanta, and a programming coordinator has been assigned to the New York area.

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By
Ludwell Sibley
Engineering Editor

REMOTE LINES AND STUDIO-TO-TRANSMITTER LINKS

Introduction. College stations depend heavily on audio lines to bring programs from remote locations into their studios and to distribute broadcast material to transmitters. These facilities are a major expense item, making it important to strike an efficient balance between cost and fidelity. A telephone company private line, a dialed-up telephone connection, a station-installed line, and a radio link are all possible media for audio transmission. This article will go into each method in some detail.

Telephone Company Lines. The traditional source of program lines has been the telephone company. Some description of the United States telephone industry will be helpful here. In the United States, the American Telephone & Telegraph Company operates the Bell System. Local service is provided by 23 AT&T-affiliated Bell companies and by about 1800 "independent" organizations. Biggest of the latter are the General, Continental, United, and Mid-Continent conglomerates. Long-distance service is largely a function of the Long Lines Department of the AT&T Company. The only significant exception is Pacific Telephone, which owns its own long-distance facilities with California and Nevada.

These regulated utilities furnish program lines under two rate schedules. The local companies file *intrastate* tariffs with the state public service commissions. The Long Lines Department files an *interstate* schedule, Tariff 260, with the FCC. Most services for licensed broadcasters come under the interstate tariff, whether they cross state lines or not. The reasoning behind this seeming paradox is that the stations are licensed by the FCC and are in a basically interstate business. Because the rate for a particular service often depends on the tariff under which it is billed, carrier-current stations frequently get a

more favorable local rate on the basis that they are neither FCC-licensed nor interstate.

FCC Tariff 260 is a bulky document which covers private lines for voice, teletypewriter, data, and video use as well as program. We are interested in "Series 6000" channels, and the discussion will center on the Long Lines tariff as of mid-1971. Partial revisions are frequent.

The channel offerings are divided into "local channel" and "interexchange" services. The local channel is by far the most usual type, comprising loops across the campus and town. Almost all studio-to-transmitter facilities are of this type.

Where the service crosses a telephone company exchange boundary, it is comprised of a local channel from the point of origination to the local Telco office, an interexchange line to the distant Telco office, and another local channel to the destination.

Table I gives the Tariff 260 charges for local channels. These were known in earlier years as "Schedule F" services. They are billable either on a monthly basis or as an occasional day-to-day service. The rates reflect the fact that "occasional" services are as expensive to install as permanent ones. The maximum charge to be applied on an occasional service is the monthly rate.

TABLE I

Local (formerly Schedule F) Channels under Interstate Tariff 260

	<u>Installation Charge</u>	<u>Monthly</u>	<u>Occasional</u> <u>First</u> <u>Succeeding</u> <u>Day</u> <u>Days</u>	
Monthly Service ¹				
Same Premises: Nonequalized				
Same Building	7.50	2.00	-	-
Extensions	7.50	2.00	-	-
Different Buildings	7.50	4.00	-	-
Extensions	7.50	4.00	-	-
Different Premises				
Nonequalized	15.00	10.00	-	-
Equalized: 100- 5000 Hz	30.00	18.00	-	-
50- 8000 Hz	30.00	24.00	-	-
50-15000 Hz	30.00	30.00	-	-
Occasional Service ²				
Nonequalized	15.00	-	2.00	1.00
Extensions: Same Premises				
Same Building	7.50	-	0.75	0.50
Another Building	7.50	-	1.50	0.75
Equalized: 100- 5000 Hz	30.00	-	4.00	2.00
50- 8000 Hz	30.00	-	7.00	2.50
50-15000 Hz	30.00	-	10.00	3.00

Local Channels under Typical Intrastate Tariff

	Instal- lation Charge	Equali- zation Charge ³	Monthly		One Week or Less	
			First	Add'l	First	Add'l
			1/4 mi	1/4 mi ⁴	1/4 mi	1/4 mi ⁴
Monthly Service ²						
Nonequalized	10.00	-	3.50	1.25	-	-
Equalized: 100- 5000 Hz	10.00	15.00	3.75	1.50	-	-
50- 8000 Hz	10.00	15.00	3.85	1.60	-	-
50-15000 Hz	10.00	15.00	4.10	1.85	-	-
Extensions: Same Premises	5.00 + 1.25/mo.					
Occasional Service ²						
Nonequalized	10.00	-	-	-	1.75	0.625
Equalized: 100- 5000 Hz	10.00	15.00	-	-	1.875	0.75
50- 8000 Hz	10.00	15.00	-	-	1.925	0.80
50-15000 Hz	10.00	15.00	-	-	2.05	0.925
Extensions: Same Premises	5.00 + 0.625/wk.					

1. Including studio-to-transmitter channels.

2. Regardless of premises.

3. Per channel or (stereo) pair of channels.

4. Fractions of a quarter mile count as a full quarter mile.

(Continued on page 9)

Engineering

(Continued from page 8)

Table I also shows the local channel rates under a typical local tariff. This tariff is for "channels for program transmission in connection with loud-speakers for the distribution of music, or...sound recording apparatus...or...combinations of loud-speakers and sound recording apparatus." With a little imagination one can visualize non-radiating carrier-current radio as a service in this class. Interestingly, the rates shown have remained the same since 1954, a pleasant surprise in an era of inflation.

For monthly services under Tariff 260, where the loop terminates is important. "Premises" in tariff language means "a building or buildings on continuous property...not separated by a public highway." Many college campuses would seemingly fit this definition, and the difference between \$10 per month and \$4 is obvious.

The nonequalized loop, with frequency response unspecified, is the most common. It is entirely proper for a customer to provide his own equalization (more on this later) on a nonequalized loop. Extensions in other buildings are common. Under Tariff 260, they provide no cost advantage over several two-point loops, but they do under local tariffs. Extensions do not particularly affect the frequency response, but they raise the overall loss somewhat.

Remote control or telemetering over a nonequalized channel is not mentioned in Tariff 260. It is discussed in the typical local tariff: "Where facilities permit, the customer may use channels furnished by the Telephone Company to transmit more than one tone in sequence or simultaneously for...remote control and indication purposes. Also...the customer may use...channels (without amplifiers)...to create channels for direct current transmission." Many carrier-current systems use DC control of their transmitters to extend their life. The equalizing equipment on other services blocks DC. Remote control on equalized networks is possible by renting a separate "zero to thirty baud" control channel, which typically costs two dollars per half mile per month.

Where a pair of long equalized channels will be used for stereo, the telephone company can lay the circuits out to minimize phase differences between them. The station should thus mention stereo usage when placing the initial order.

Studio-to-transmitter channels are usually entirely intraexchange, and are billed as local channels by the month. If they go outside the local exchange area they bear interexchange costs as well. (They do not involve a "station connection" charge on the interexchange facility, however.)

Local channels from one customer to the Telco office may be interconnected freely with channels of another customer, either intra- or interexchange. This includes bridging the sound channel of a television network. There may be "station connection" and patching charges for these occasions. Broadcast networks must provide feeds of Presidential speeches without charge to stations requesting them. To the telephone company this requires only notice that permission to rebroadcast has been received, plus payment of the necessary connection and mileage charges [1].

All program channels are officially described as one-way services, or one-way reversible at extra cost. However, unequalized local channels will work both ways, as will equalized loops short enough not to require amplifiers. In the latter case, the equalization will not be as accurate in the reverse direction.

The interexchange services are less common. Table II gives the rates for these channels. Unlike the local channels, which Tariff 260 treats on a flat-rate basis, the interexchange rates are based on distance. Mileage is figured airline between the "rate centers" of the exchange areas. For multi-point networks, the mileage is the smallest possible combination of the individual distances. On occasional services any fraction of an hour counts as a full hour except for accidental overruns of up to five

minutes. Interexchange rates on a typical local tariff are similar.

Interexchange services are one-way, and are all reversible except the 6009 channel. Reversal can be done on a patch basis by Telco, or by customer-controlled relays. The tariff includes charges for reversals. Telco will do patched reversals either at a specific time or, for a \$5 per-location-per-half-hour monitoring fee, on a specified audio cue.

The 6001 channel is termed a "speech-only" circuit, and is theoretically offered only where no better facility is available. Its nominal 300-2500 Hz response was originally the result of taking over telephone trunks on an emergency basis for program use. As the response of trunk facilities has improved, so have 6001 channels.

The station connection charge is used where a local channel meets an interexchange circuit. It is not required on studio-to-transmitter channels, or two-point channels of 25 or fewer miles.

As with local channels, "occasional" services are billed at a total no higher than the monthly rate.

In "multi-zone" metropolitan areas, each zone counts as an exchange. These areas are listed in FCC Tariff 255. When an interexchange channel longer than 40 miles terminates in a multi-exchange city, however, the exchange area is the entire city.

The tariffs do not list technical parameters. On equalized services (6004 through 6009, and equalized local loops) the frequency response is typically +1 dB over the specified range, as measured with a 600-ohm generator and meter. On nonequalized local loops the response is undefined, and varies from superb to not so

TABLE II
Interexchange Channels under Interstate Tariff 260

Type	Former Schedule	Bandwidth	Per Mile		Station Connections-Per Connection	
			Per Hour	Per Month	Per Hour, Per Occasion	Per Month
6001	E	300- 2500	\$ 0.12	-	\$ 2.25	-
6002	D	200- 3500	0.14	-	2.25	-
6003	C	200- 3500	-	\$ 4.10	-	\$ 35.00
6004	B	100- 5000	0.19	-	6.75	-
6005	A	100- 5000	-	5.50	-	90.00
6006	BB	50- 8000	0.24	-	9.50	-
6007	AA	50- 8000	-	6.90	-	125.00
6008	BBB	50-15000	0.30	-	12.00	-
6009	AAA	50-15000	-	8.65	-	156.00

Engineering

(Continued from page 9)

good. On the 6001, 6002, and 6003 services the response is down 10 dB or less at the specified limits. The noise levels are not specified either. However, on equalized studio-to-transmitter links it is expected that the broadcaster will be able to meet the FCC 60-dB requirement for 15-kHz FM service, or the 45-dB requirement for 5-kHz AM service. Equipment used for noise measurement should reject frequencies outside the band of interest in order to get accurate readings. The same satisfy-the-FCC philosophy holds for harmonic distortion measurements. Losses are undefined also. On unequalized loops they run up to 12 or 15 dB at 1000 Hz with 600-ohm terminations. On equalized services losses slightly beyond 30 dB have been encountered.

The level into an equalized program channel is normal +8 VU on peaks. This corresponds to a sine wave power of 8 dBm*, or 6.3mW, or 1.94 VRMS across 600 ohms. This assumes measurement at the customer connection point, which looks into the cable through a stepdown transformer. This level may be too "hot" for some local cables, and reduced levels will be necessary to prevent crosstalk. A level of +8 VU is often too high for non-equalized pairs, which lack the transformer. For these a level of 0 VU on peaks (0 dBm, 1 mW, or 0.774 VRMS across 600 ohms) is safe.

On equalized services it is important to feed the loop from a 600-ohm source, and terminate it in a 600-ohm load. This is because the installer lines up the equalization with 600-ohm test gear. Use of other impedances, such as the 1200 ohms that some older commercial carrier-current transmitter presented, will upset the frequency response.

Ordering Telco circuits is a bit easier if one locates a marketing representative who deals mainly in "special service" lines, especially program. For across-town services this person is probably in the local company. For out-of-town circuits he is probably a Long Lines representative. It is best to deal with one salesman consistently.

It is wise to give the telephone company early warning when an equalized service will be necessary. Where distances of several miles are involved, it may take weeks or months to do cable rearrange-

ments and add program amplifiers where none preexist. On interexchange service, the setup time is much less if the local loops are already installed. To save time and reduce installation charges, many stations keep a season-long loop from their studios to the local telephone office. Interexchange services may be cancelled up until scheduled air time, but local channels would be billed as usual. In case of technical failure, rebates are made in proportion to time lost [1].

"Occasional" circuits are usually ordered on the basis of a specific starting time to "goodnight," the time the patches are taken down. The studio generally calls the Telco testboard at the end of the program because monitoring is not done continuously.

The interexchange circuit is generally patched up a couple of hours in advance of scheduled air time. It is good to contact the local testboard and make final verification of circuit continuity well in advance.

In case of a mixup where a remote crew discovers that the local loop is installed, but the local testman has no knowledge of the order, a call to the control office (nearest the receiving end) will be helpful [1].

There are certain reliability problems associated with Telco local loops, largely due to the fact that the circuits lie idle most of the time and are thus subject to accidental disconnection. The station can take certain steps to help matters. It can keep all unused lines energized with air cue, test one, or a half volt of 60 Hz. If the Telco installer does not supply a permanent 10K resistor across the connecting block on nonequalized loops, the station can. This provides something to test into for continuity checks. The repeat coil on an equalized loop provides the same continuity. The Telco salesman can specify protective measures (rubber caps and special markings on terminals) on the service order, and it is good to discuss this with him. Where a loop has lain idle for a

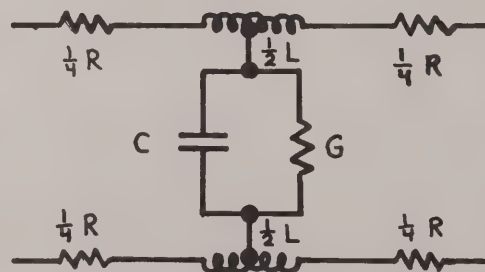
while, it is wise to check it out several hours in advance of air time.

Basic Transmission Data for Audio Cables. To get a detailed understanding of program loops, some basic cable transmission theory is necessary. With this understanding, it becomes possible to make great improvements in the performance of either non-equalized Telco loops or station-constructed lines.

Any cable pair has resistance, capacitance, inductance, and shunt conductance or leakage. A mile of 24-gauge telephone cable, for example, can be represented by the lumped equivalent circuit of Figure 1 [2], [3], [4], [5], [6]. The circuit components R, L, and C are essentially constant from DC to 15 kHz. The conductance varies a great deal, but is negligible at any audio frequency. The most common sizes of wire are 19, 22, 24 and 26 gauge, having 86, 174, 274, and 440 ohms per mile respectively. The smaller sizes are prevalent and are becoming more so. The capacitance of common polyethylene-insulated cable pairs is 0.083 μ F per mile for all gauges.

Standard equations are available to calculate the loss of a cable pair and to find its characteristic impedance [7], [8], [9]. In general, a long cable pair has appreciable loss. Its characteristic impedance (the terminating impedance with which it works most efficiently) is not a pure resistance. Thus the "lossless" and "resistive" approximations that apply to many RF transmission lines work poorly at audio frequencies.

The loss of a 24-gauge pair, and its characteristic impedance, appear in Figure 2. The loss figures represent the lowest loss obtainable from the cable, by use of characteristic impedance terminations. In general, one would rather use a more convenient termination such as 600 ohms resistive. The price is slightly higher loss. Note that the characteristic impedance is anything but resistive: over most of the



FOR 1 MILE OF 24-GA
CABLE AT 1 kHz:

$R = 274 \Omega$
 $L = 0.95 \text{ mH}$
 $C = 0.083 \mu\text{F}$
 $G = 1.22 \mu\text{S}$

FIG. 1

*Some broadcasters define 0 VU as +8 dBm.

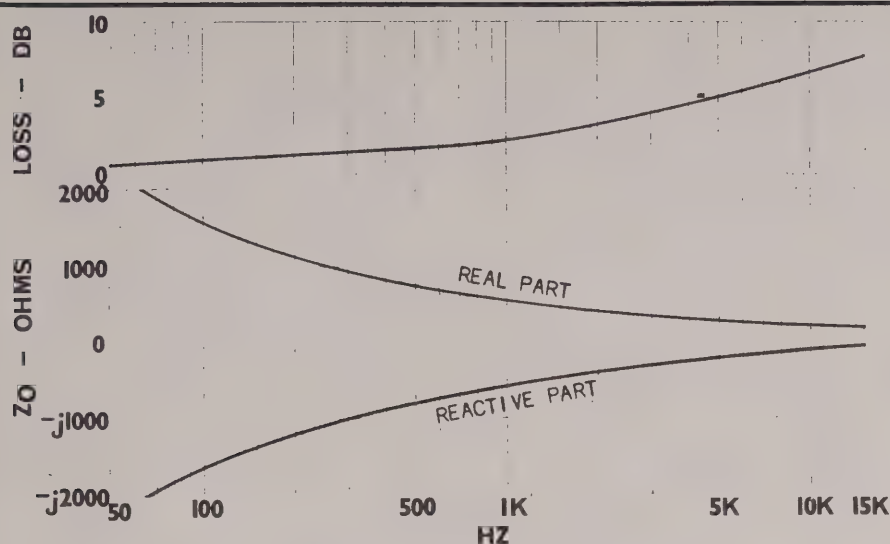


FIG. 2. 24 GA PAIR, .083 UF/MI

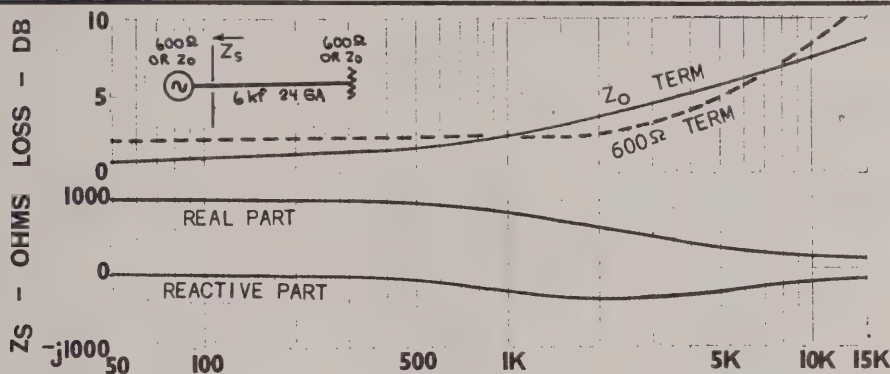


FIG. 3

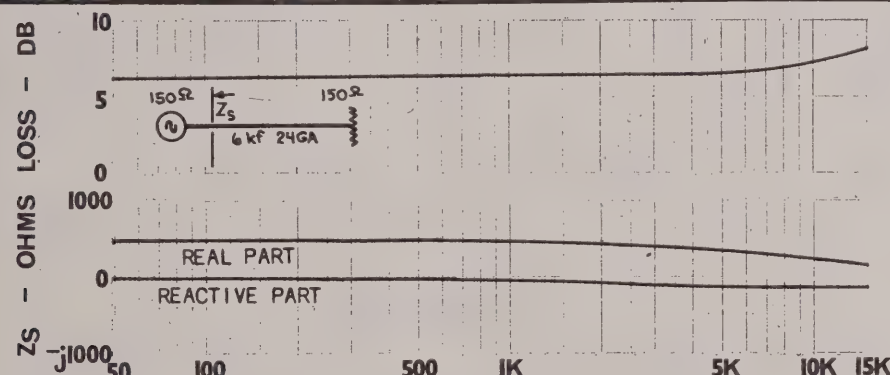


FIG. 4

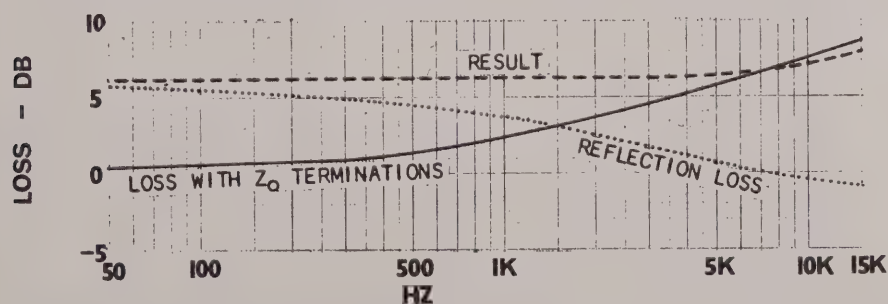


FIG. 5

audio band the reactive part ($-jX$) is almost as large as the resistive portion.

If a resistive load is placed at one end of the cable pair, the impedance at the other end is no longer the characteristic impedance. The impedance at the sending end will depend on the load and also the loss of the cable. If we have, for example, a 6000-foot (6 kilofoot, or 6 kF) line with a 600-ohm load, the sending end will see the impedance values (Z_s) shown in Figure 3. The resulting loss also appears in Figure 3. Note that use of 600-ohm termination has reduced the slope (the difference between the 50-Hz and 15,000-Hz losses) from 8.0 dB to about 7.0.

If one chooses to use 150-ohm terminations (both source and load), an extension of this effect occurs. The sending-end impedance Z_s now looks like Figure 4. Because Z_s is a very poor match for the 150-ohm source at low frequencies, only a small amount of power actually flows into the line. At high frequencies the match is much better, so more power enters the line and the reflection loss is less. Similar mismatch effects occur at the receiving end. The resulting reflection loss partially makes up for the line slope. Figure 5 shows the reflection loss and the resulting loss of the line. Note that by simply changing the terminating impedance, a great deal of the slope disappears from the line. This trick is exceedingly valuable in equalizing short loops. Because it is normally done by placing 4:1 repeat coils between the 600-ohm studio equipment and the line, it is known as "coil" equalization. If the remaining slope is objectionable, an equalizer will clear it up. The price of any equalization scheme is, of course, that it raises the overall loss of the line. Fortunately, the terminal equipment normally has enough reserve gain to make up for the losses.

Actual cable pairs often have "bridged tap," which is simply an extension of the cable to another location [10]. A cable serving Main Street, for example, may have its pairs brought out on terminals in the 1000, 1200, and 1400 blocks. This allows the connection of a telephone subscriber anywhere along the cable. If a program line is terminated at 1200 Main Street, however, the two blocks of bridged tap extending to 1400 will act as a shunt capacitor and reduce the frequency response. Telephone companies frequently have to rework cables to remove bridged taps, especially for 15-kHz service. No such treatment is available on nonequalized lines (without special construction charges, at

(Continued on page 12)

Engineering

(Continued from page 11)

least), but moderate amounts of bridged tap can be equalized out.

Most telephone loops shorter than 18 kF are "nonloaded," and are composed of either one small gauge of cable, or a mixture of the two smallest gauges of wire that will meet the DC resistance limit of the central office [10], [11], [12], [13]. The limit is usually 1200 or 1300 ohms. Thus a nonequalized broadcast line, composed to two long nonloaded telephone loops, could have a DC resistance as high as 2600 ohms.

On telephone loops beyond 18 kf and on virtually all interoffice trunk cables, it is normal to use "loading" to reduce the transmission loss of the line [14]. By adding small inductors at regular intervals along the line, usually 6 kf, the line loss is reduced at voice frequencies, at the expense of frequencies above about 3200 Hz. This technique is substantially more economic than using repeaters or large-gauge wire, but it does limit long non equalized broadcast loops to nothing above about 3500 Hz. On a long equalized service it is often necessary to open splices and remove loading coils to allow 5-kHz or higher response.

Figure 6 shows the characteristic impedance and loss of a 24-kf loop of 24-gauge wire with 88-mH coils at 6-kf intervals. The loss for the same loop nonloaded is included for comparison. Note that the response is much better at voice frequencies and much worse above about 3400 Hz.

The examples given here apply largely to cables with 0.083 uF/mi capacitance. Higher capacitance means somewhat poorer response. Vinyl-insulated intercom cable and WC-534 surplus field cable commonly have 0.132 uF/mi. Shielded twisted pairs can go as high as 0.254 uF/mi. Fortunately, for station-installed remote lines the distance is usually so short that the fidelity is good regardless of the capacitance of the line.

As has been mentioned, the use of 4:1 coils at the ends of nonloaded loops helps their response considerably. The transformation does result in odd impedances of up to 2000 ohms on the studio side of the coils. This is the reason why most studio equipment feeds the line through a 6-dB 600-ohm isolating pad. The pad keeps the line impedance from upsetting the performance of the console VU meter.

The equalizer of Figure 7 is a favorite method of correcting slop remaining after

coil equalization [15]. Its principle of operation is quite simple. At low frequencies the LC circuit is essentially a short, so the resistor is shunted across the line and produces loss. At high frequencies

the LC combination comes into resonance, removing the shunt and its loss. The commercial equalizers of Table III use this basic arrangement.

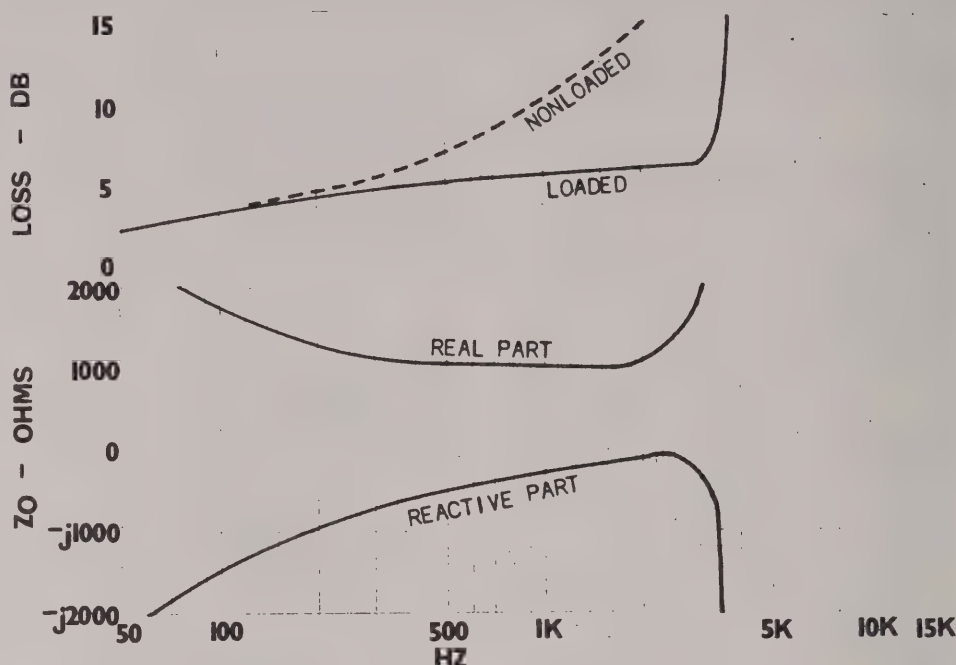


FIG. 6. 24 KF 24 GA LOADED CABLE

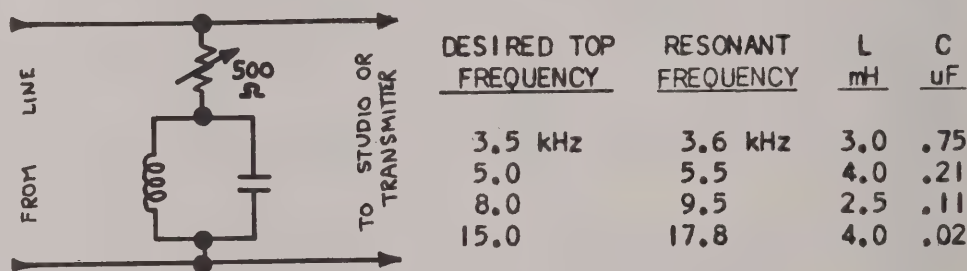


FIG. 7. RESONANT EQUALIZER

TABLE III

Line Equalizers

Type	Frequency
Altec 17224	8 kHz
Altec 17249	15 kHz
Gates LE-1, LE-2	5 kHz (?)
Gates SA-118	4 and 6 kHz
Hughey and Phillips LE 123	5, 8, and 15 kHz
Hughey and Phillips LE 115	15 kHz
RCA 56A	10 kHz

Figure 8 shows test setups for setting the equalization. The 10-dB pad at the oscillator output does two things. It guarantees that the line is driven from 600 ohms despite any variations in the generator impedance, and it keeps the uncontrolled impedance of the line from disturbing the accuracy of the level-setting meter. Otherwise the testman at the sending end will keep readjusting the level in response to line impedance changes, and the test results will suggest that the line is better than it really is.

If the 4:1 coils are present, none of the test gear need be balanced. If the coils are absent, as with loaded nonequalized loops, the measuring end (at least) should be balanced to hold down errors due to noise. The normal studio gear at both ends should always be balanced. This minimizes noise and prevents crosstalk into and from other circuits.

The adjustment procedure is quite simple [17], [18].

1. Set the equalizer resistor to maximum resistance.
2. Measure the line loss at the top fre-

quency to be used (3.5, 5, 8, or 15 kHz).

3. Set the generator to 1 kHz.
4. Adjust the resistor for the same loss as was measured at the top frequency.
5. Run a response curve and make minor adjustments if necessary.

On long nonloaded loops where the equalizer does not produce enough effect, move it to the 600-ohm side of the receiving coil and try again.

Where Telco loops are charged under a local tariff rather than the FCC schedule, the cheapest way to feed a group of carrier-current transmitters is to order a nonequalized loop across the campus, with extensions in the additional locations to be served. This is a practical arrangement fidelity-wise.

As an example, suppose that a studio at location A is to feed transmitters at B, C, and D. One could order two-point loops A-B, A-C, and A-D, but suppose that a multi-point arrangement is used, with bridging done at an on-campus point such as a PBX building (Fig. 9). With the typical

lengths and gauges shown, the transmission performance (obtained from measurements on a laboratory cable simulator) would be:

1-kHz Loss, A-B

With 600-ohm termination:	
A-B direct	1.7 dB
A-B, with C and D added	8.0 dB

Slope (0.1-5.0 kHz)

With 600-ohm terminations:	
A-B direct	1.8 dB
A-B, with C and D added	1.6 dB

1-kHz Loss, A-B

With 150-ohm terminations:	
A-B direct	5.3 dB
A-B, with C and D added	11.7 dB

Slope (0.1-5.0 kHz)

With 150-ohm termination:	
A-B direct	0.1 dB
A-B, with C and D added	0.3 dB

Another possibility is that there is no convenient bridging point on campus, and that the bridging is done at a Telco central office some distance away (Fig. 10).

1-kHz Loss, A-B

With 600-ohm terminations:	
A-B direct	9.7 dB
A-B, with C and D Added	13.3 dB

Slope (0.1-5.0 kHz)

With 600-ohm terminations:	
A-B direct	1.8 dB
A-B, with C and D Added	3.2 dB

1-kHz Loss, A-B

With 150-ohm terminations:	
A-B direct	9.3 dB
A-B, with C and D added	15.3 dB

Slope (0.1-5.0 kHz)

With 150-ohm terminations:	
A-B direct	1.8 dB
A-B, with C and D added	2.0 dB

Note that the penalty for adding the extra locations is mainly more loss at 1 kHz. But the loss values shown here can be absorbed by most commercial transmitters, many of which operate as low as -25 dBm. The fairly gross impedance mismatch involved in the bridged arrangement produces somewhat more response slope, but 150-ohm terminations (4:1 coils) at each end and/or mild amounts of equalization will make the slope negligible. There will be no serious effect on a signal-to-noise ratio in any event.

Multipoint loops, although satisfactory in terms of cost and transmission, have some practical disadvantages. They are hard to troubleshoot: a partial open or ground anywhere will put noise into the loops. Legs cannot be added or removed without some change in loss to the other

(Continued on page 20)

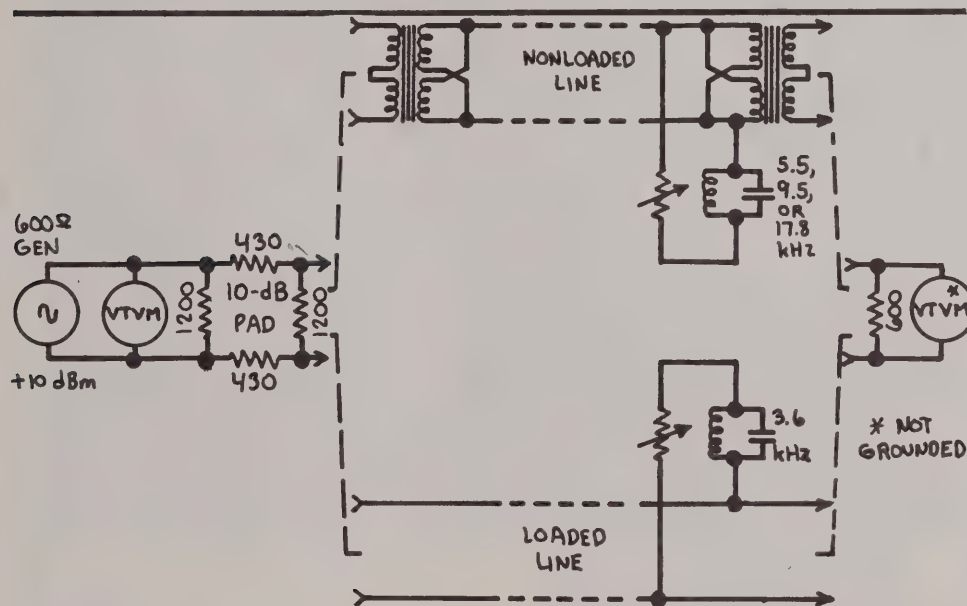


FIG. 8. EQUALIZER TESTS

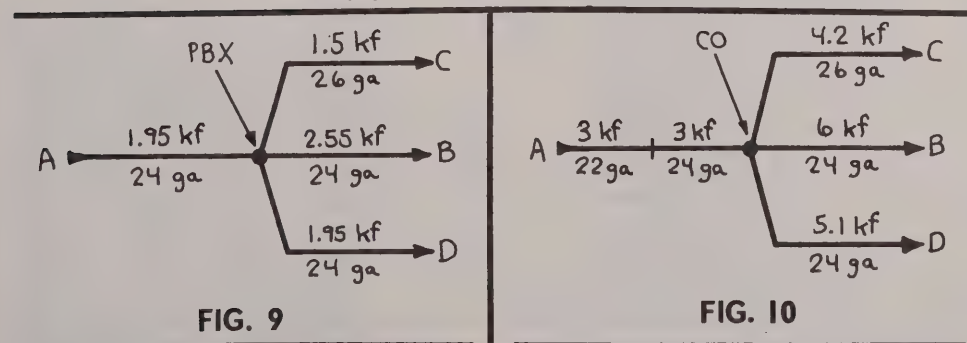


FIG. 9

FIG. 10

MUSIC INDUSTRY DEPARTMENT

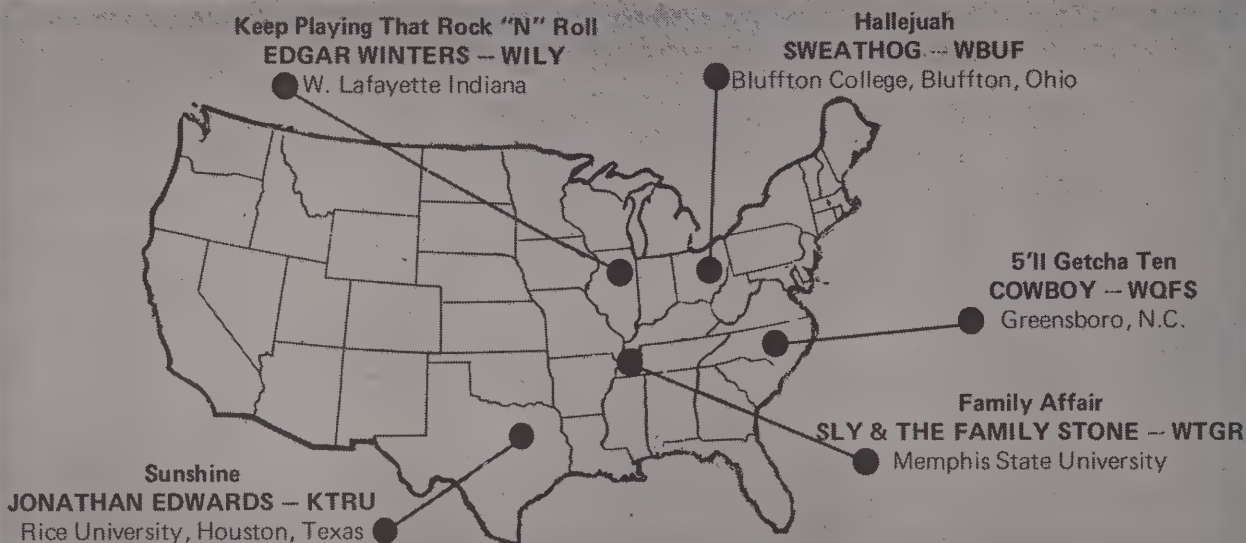
SINGLES

FOR LADIES ONLY
WILD NIGHT
LIFE IS A CARNIVAL
SHAFT
STONES
SUPERSTAR
IMAGINE
FAMILY AFFAIR
BABY I'M-A WANT YOU
TOMORROW'S A NEW DAY
SUNSHINE LOOKS LIKE RAIN
HAVE YOU SEEN HER?
FEELIN' DOWN FARTHER
DOLLY'S DAGGER
DEVIL'S ANSWER
GOT TO BE THERE
RIGHT BETWEEN THE EYES
HOLD ON
EVERYBODY'S EVERYTHING
MARBLEHEAD MESSENGER

STEPPENWOLF
VAN MORRISON
BAND
ISAAC HAYES
NEIL DIAMOND
TEMPTATIONS
JOHN LENNON
SLY & THE FAMILY STONE
BREAD
CRABBY APPLETON
NIGEL OLSSON
CHILITES
DOOBIE BROTHERS
JIMI HENDRIX
ATOMIC ROOSTER
MICHAEL JACKSON
CROSBY, STILLS, NASH & YOUNG
BALLIN' JACK
SANTANA
SEATRIN

DUNHILL
WARNER BROS.
CAPITOL
ENTERPRISE
UNI
GORDY
APPLE
EPIC
ELEKTRA
ELEKTRA
UNITED ARTISTS
BRUNSWICK
WARNER BROS.
REPRISE
ELEKTRA
MOTOWN
ATLANTIC
COLUMBIA
COLUMBIA
CAPITOL

BREAKS



ALBUMS

SMASH YOUR HEAD AGAINST THE WALL
ROCK LOVE
THE MORNING AFTER
CAHOOTS
LOOKIN IN
HOOKFOOT
SIR LORD BALTIMORE
JONATHAN EDWARDS
CLOSER TO THE GROUND
HOOTERALL
SURF'S UP
ROCKIN' THE FILLMORE
TUPELO HONEY
FUTURE GAMES
5'11 GETCHA TEN
MARBLEHEAD MESSENGER
ONE FINE MORNING
THE GREAT BLIND DEGREE
NEW RIDERS OF THE PURPLE SAGE
STREET CORNER TALKING

JOHN ENTWISTLE
STEVE MILLER BAND
J. GEILS BAND
THE BAND
SAVOY BROWN
HOOKFOOT
SIR LORD BALTIMORE
JONATHAN EDWARDS
JOY OF COOKING
WALES & GARCIA
BEACH BOYS
HUMBLE PIE
VAN MORRISON
FLEETWOOD MAC
COWBOY
SEATRIN
LIGHTHOUSE
RICHIE HAVENS
NEW RIDERS OF THE PURPLE SAGE
SAVOY BROWN

DECCA
CAPITOL
ATLANTIC
CAPITOL
PARROT
A&M
MERCURY
CAPRICORN
CAPITOL
DOUGLAS
WARNER BROS.
A&M
WARNER BROS.
REPRISE
CAPRICORN
CAPITOL
EVOLUTION
STORMY FORREST
COLUMBIA
PARROT

DISC NOTES

By RICK SPENCE

December finds us with two new publications in the pop-rock and music publishing fields. The first is called *Planet* and will feature events, people, and places on the rock music scene. The first issue is a tribute to Bill Graham's now defunct Fillmore East and West. It gives interesting background stories on the stars who made history at these showcases of rock music such as Janis Joplin, Muddy Waters, B.B. King, etc.

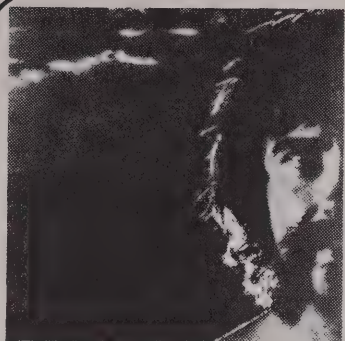
The second publication is appropriately called *Words and Music*, and offers the reader the lyrics and the accompanying sheet music for some of the popular music of the day. This is certainly worth investigating if you are into singing and/or playing a musical instrument. By the way, both magazines will be available at newsstands everywhere.

Over in the Record Service Department, Gunter G. Hauer has been placed in charge of College Radio Promotion at Atlantic records. He would like all mail to be addressed to him at 1841 Broadway, New York, New York, 10023. Anybody who is having trouble with Atlantic service should contact him at this address. Atlantic usually does pretty well with album service, so you shouldn't have to use this address too often.

Speaking of album service, and I hope you people realize this, if you have any problems at all with receiving your fair share of product, simply drop me a line at JCR and we'll see what we can do about it.

Tom Hurwitz, music director of WHCB-FM, a new station on the Penn State University Hazleton campus at Hazleton, Penn., 18201, writes to advise me that he is not receiving new material from the record companies. They will soon be expanding to 250 watts of stereo power, which should cover a good portion of Eastern Pennsylvania, including at least four other Penn State extension campuses. They are an educational station, and programming ranges from classical and easy listening to progressive and hard rock. Record companies who wish their product to be played on the station should send product to Tom at the above address.

(Continued on page 16)

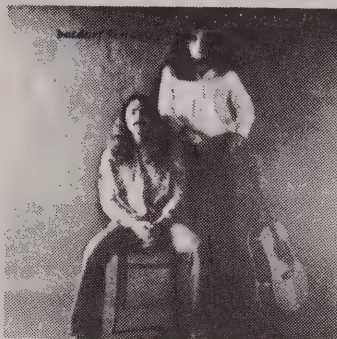


ARTHUR GEE (Arthur Gee)
TUMBLEWEED RECORDS TWS 101

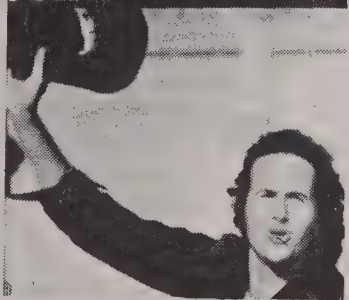
Canadian Arthur Gee shows his varied roots on debut outing for himself and the new label. Interesting mixture of folk-blues-rock and what-have-you. Should prove to be a good first for Tumbleweed. Prime Material: "Cotton Suede."

BATDORF & RODNEY ATLANTIC SD 8298
(Off The Shelf)

For those that dig acoustic guitar music, this LP is right on. Sounds like Atlantic has themselves a winner in Batdorf & Rodney. Single potential: "Oh My Surprise." Another good cut: "Me and My Guitar."



JOHN STEWART



JOHN STEWART WARNER BROS. WS 1948
(The Lonesome Picker Rides Again)

This album deserves a break on almost every cut. Try them all. Especially appealing for its "down home" sound is "Just An Old Love Song." From there on, it's your move.

JOHN PRINE ATLANTIC SD 8296
(John Prine)

This album is a must! The good old Washington Crew is not going to like certain material, but you can't please all of the people...Listen to "Illegal Smile" to see what I'm talking about. This dude is another Dylan, even better because he is more contemporary. All compositions are original.



LAZARUS BEARSVILLE BR 2044
(Lazarus)

Produced by Peter Yarrow of Peter, Paul, and Mary, this album certainly shows his influence on the sound of Lazarus. Just another example of the brain behind the performer, Lazarus could possibly make it if given a listen or two; very tight harmony ala P, P, & M.

Disc Notes

(Continued from page 15)

Jerry White, program director of KTCC at Colby Community College, 1255 South Range, Colby, Kansas, 67701, is interested in exchanging some radio programs with other college radio stations around the country. At this time they have about 18 five, ten, and fifteen minute programs, including such titles as Educational Evolution, Hidden Moments in Music, and Student View, with more in the works. I think it would be good to compare notes with other people's program concepts. Contact Jerry at the above address if you're interested.

(Continued on page 17)

Other New Releases

Yankee's Rebel Son Tom Ghent	Kapp
Budgie Budgie	Kapp
Danny Cox Danny Cox	Dunhill
Mud Mud	UNI
Guts Jodo	Decca
Rockin' Foo Foo	UNI
Stackridge Stackridge	Decca
Synergy Glass Harp	Decca
Rotten to the Core Crabby Appleton	Elektra
Dynasty Stan Getz	Verve
Hookfoot Hookfoot	A&M
Restriction Cactus	Atco
'Frisco Mabel Joy Mickey Newbury	Elektra
Electric Warrior T. Rex	Reprise

Fleetwood Mac



FLEETWOOD MAC
(Futre Games)

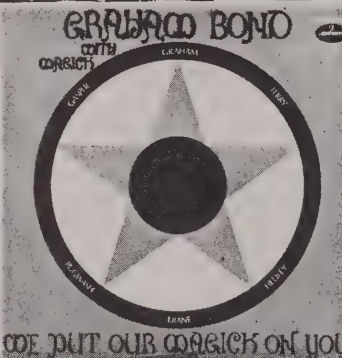
REPRISE RS 6465

Full sound, much harmony, and interesting changes combine to make this album a winner. Personnel have changed, also, but group stays tight throughout. Heavy: "What A Shame."

RICK NELSON
(Rudy The Fifth)

DECCA DL 75297

Still in the mainstream, Rick is backed on his latest LP by **The Steve Canyon Band**, a country-rock group that blends well with the sound he's into nowadays. A little Dylan, a little Rolling Stones, & plenty of original Rick Nelson writing combines to compose an interesting album. For country flavor try "Sing Me A Song."



GRAHAM BAND WITH MAGICK
(We Put Our Magick On You)

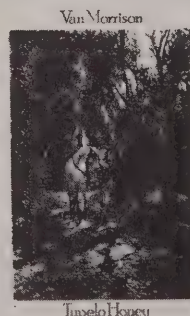
MERCURY SRMI-612

From start to finish this is a standout LP. Entire album follows lead of title cut, "I Put My Magick On You" and does so complete with liner notes on their magick, which is musical craftsmanship of the highest order. A must for progressives: "Time To Die."

CURTIS MAYFIELD
(Roots)

CURTOM CRS 8009

Fine work all around by this veteran soul innovator which should have many college stations riding it. Includes the latest Mayfield single "Get Down" as well as 6 other top notch Mayfield compositions.



VAN MORRISON **WARNER BROS. WS 1950**
(Tupelo Honey)

From the days of "Brown-Eyed Girl" to the current LP "Tupelo Honey" Van has consistently come across with some of the most original sounds around. This one is no exception. Top production and arranging. Includes the new single "Wild Night."

Disc Notes

(Continued from page 16)

In the Changing Faces Department, Rick Raiford is stepping down from his post as music director of WTGR at Memphis State University. His replacement in that position is Bill Boyce, according to program director Tim Curry, who claims that he's highly qualified and "just weird enough" for his audience to like. Anybody know what he's talking about? He also mentioned that WTGR has moved to a brand-new facility. Lots of luck, guys!

Warren Carter, station manager of WBUF, Bluffton College, Bluffton, Ohio, reports a change of call letters from WBCR. He also brings up a statement that I find bears repeating, and a little explanation. Warren claims that the music section of *JCR* is "a little bit out of date", and that he's heard other college radio stations say the same. This might be true, but for reasons that haven't been considered at your end.

First of all, *JCR* is a monthly publication, and it generally receives new albums at the same time most stations receive them. Under these circumstances, how can we possibly review albums before some stations are playing them?

Second, we are not attempting to introduce material you already know about, but rather give a fair, unbiased review of the best of the month's releases. The trend lately has been the rush-release of album product by the record companies to jump on a particular bandwagon first. Therefore, albums cannot be up to date on this monthly basis.

The best source of tips as to what the hot records and albums are is the singles and albums listings which are compiled from the reports submitted by other stations. The more stations who report regularly to *JCR*, the more accurate and up-to-date these listings will be.

While I'm on the subject, some stations are still sending their playlists to Norman, Oklahoma, the previous home of *JCR*. The new address is in care of me, Rick Spence, at the following address:

**Journal of College Radio
Department of Communication
University of Southern Mississippi
P.O. Box 5141 Southern Station
Hattiesburg, Mississippi, 39401.**

We have had some reports come in as much as a month late, and this doesn't help keep the music listings up to date, either. I can only hope that if you, as program and music directors, are not familiar with some-

thing that you see listed in the Music Industry Department, you make an effort to get a copy and give it a listen. Okay?

Well, the Christmas break is not far ahead of us, so I'd like to wish one and all a safe and enjoyable Xmas and New Year—See you in February.

WVHC-FM's Kraus Major Award Winner

Because of his contributions to the field of broadcasting as an educator for the past 14 years, Jeffrey C. Kraus, director of Hofstra University broadcast services and general manager of the University's radio station, WVHC-FM, has this year won one of the three major awards for excellence in local broadcast service presented annually by the Department of Radio and Television, Council of Churches of the City of New York.

WVHC-FM, on the air 54 hours a week throughout the year, is operated under Mr. Kraus's supervision by a completely volunteer staff: students from Hofstra and other Long Island colleges, from high schools, and also young men and women who combine work at the station with their paying jobs. More than 80 former staff members have later been professionally employed in various phases of broadcasting.

Many programs produced by the station are also distributed nationally by the National Educational Radio Network, in addition to being heard locally in the area reached by the station's 250 watt transmitter. Currently a program, "Laurentian Christmas," is being produced by the station for the Canadian Association of Broadcasters. It will be aired nationally in Canada during December and by WVHC-FM during the holiday season.

The most recent program award won by the station was a certificate of merit in the 1971 Armstrong Awards sponsored by Columbia University for outstanding FM programs. The judges praised the program, "Spread the Word — The Story of Louis Lomax," as "a jewel of a portrait... a very unusual presentation for a college station to make." Other citations for outstanding programs were awarded to WVHC previously by the Intercollegiate Broadcasting System and Pi Delta Epsilon, the honorary journalism fraternity.

The Council of Churches award was presented to Mr. Kraus by Melba Tolliver of the Channel 7 Eyewitness News team during the Awards Luncheon on Thursday, November 18. The award for local tele-

vision programming was won by NBC; that for local radio programming by Station WJDM in New Jersey.

In his brief acceptance remarks, Mr. Kraus pointed out that the financial problems faced by colleges and universities have an impact on many of the educational stations sponsored by these schools. He also pointed out that federal funds are not available to help volunteer-operated stations such as WVHC-FM because educational stations are required to have a minimum of three full-time employees in order to be eligible for the grants, whereas the Hofstra station has only the one paid staff member.

Mr. Kraus is a graduate of Hofstra and began his work with the University's radio station during his undergraduate years.

SDX News Award Open


Sigma Delta Chi is accepting nominations for its annual broadcast awards in news reporting, public service journalism and editorializing. February 1, 1972, is the deadline. For information and entry forms, write to: Sigma Delta Chi Awards, 35 E. Wacker Dr., Chicago, Ill. 60601

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- Free standing
- Table top
- Wall mounting



Enjoy real fingertip convenience with these Spotmaster tape cartridge racks. Three styles, holding up to 200 cartridges, meet every need. RM-100 wood rack stores 100 cartridges in minimum space, for wall or table top mounting, \$47.50. LS-100 lazy susan rack holds 100 cartridges on table top rotating stand, \$79.50. RS-200 revolving rack is on casters for floor storage and mobility, accepts 200 cartridges, \$145.50. RS-25 rack sections, used in rotating racks, hold 25 cartridges, may be wall mounted individually; rugged steel construction, \$13.00.

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McCloskey Report

WTTG-TV
NEWS

The News Director of the campus station at Georgetown University, WGTB can get White House press credentials, admitting him to the White House, the news conferences held there and any of the other events to which reporters are admitted, such as bill signings and welcoming ceremonies.

The same newsman, until recently, could not get credentials from the Washington, D.C. police department so that he could cover demonstrations on and near

the University's downtown campus with the same privileges as other newsmen.

These details come to light in a paper by Art Cierco, a student in Communications Law and director of the Public Information Office at Georgetown.

In his research, Cierco discovered that as of a year ago seven of the nation's largest police departments did not issue press credentials to student journalists, five do and three others failed to say in their letters, for one reason or another.

Floyd Norris, associate editor of the College Press Service says "members of the student press generally are unable to get press pass cards in the big cities. In small towns, where there is only one college, they are usually able to work something out."

It would seem that the argument for college broadcasters to hold press credentials would be even more powerful than the argument of student newspaper editors.

While some college papers cover events of the world, (some in fact have sent reporters to Vietnam to cover the war) almost all college stations have regularly

scheduled newscasts covering campus and off campus events.

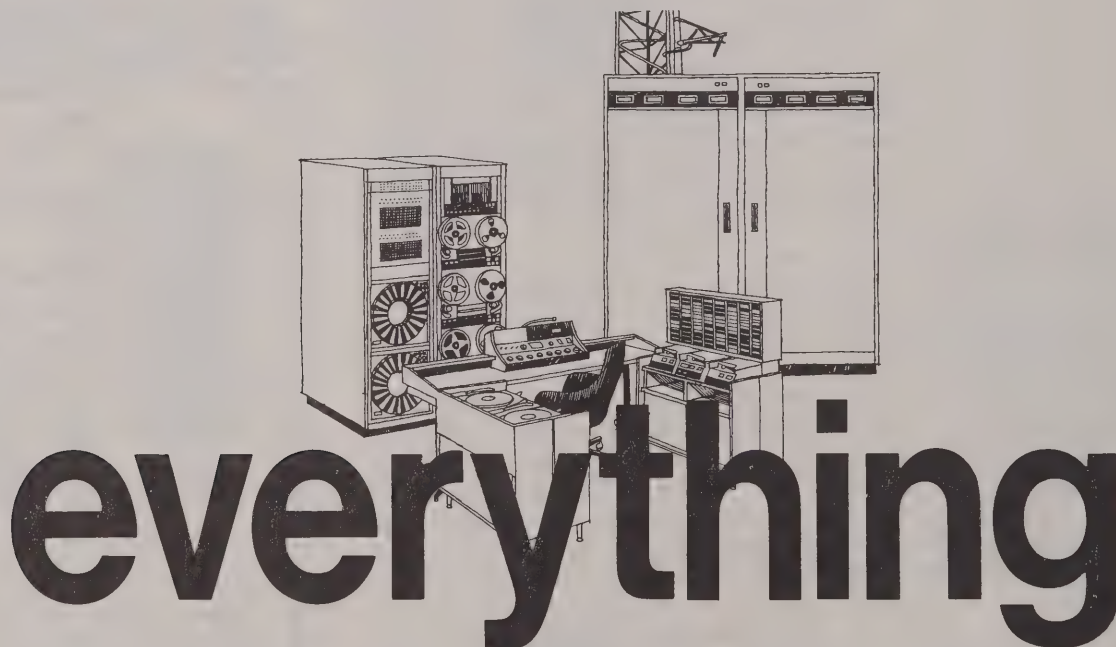
Both newspapers and radio stations on the campus are sending newsmen out to cover, among other things, demonstrations on or near the school grounds.

In Washington, newsmen covered a demonstration against the building of a bridge that would carry an interstate highway across the Potomac River from Virginia to the edge of the Georgetown campus.

Campus newsmen had trouble with police during their coverage of that incident and also at an anti-war demonstration at the Watergate Apartments (home of Attorney General Mitchell) in which many Georgetown students participated.

Despite their regular coverage of such events, the committee of newsmen who pass on the issuance of credentials told the student newsmen who applied for credentials that they did not qualify as "full-time" representatives of a bona fide news gathering agency whose duties require them to work within police lines."

(Continued on next page)



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A DIVISION OF COMPUTER EQUIPMENT CORPORATION

McCloskey Report (Continued from page 18)

Student journalists have applied for credentials at least three times and now, with three changes in personell in the Metropolitan Police Information Office and a change in leadership on the committee of newsmen who authorize issuance of credentials, there has been good progress toward certifying these reporters.

In other cities, the story varies. Here is a sampling of the replies received by Ciervo in his research for his paper. Most letters came from Chiefs of Police or one of their deputies.

PHILADELPHIA--None have been issued. The student press is not especially interested in this type of coverage ("hot news") which is done more effectivly by the professional news media.

BALTIMORE--Our standard operating procedures for issuing Press Cards call for professional qualifications, which, by their nature, cannot be met by student reporters.

NEW YORK--It is Department policy to deny college requests.

HOUSTON--These official cards are issued **only** to news media representatives

who actively engage in the reporting of spot news such as homocides, accidents, etc.

CHICAGO--Ordinance does not permit the issuance of press cards to students.

ST. LOUIS--Does not issue press passes to members of the student press. A press pass allows members of the mass media to cross police lines. . .and they, in effect, act as representatives of the community.

CINCINNATI--We have refused all such requests. Applicants must be at least 21, American citizens with no criminal record and a full-time, salaried, news-gathering employee.

The following cities do approve student applications:

DALLAS--We have never been approached. . .but we have no reservation.

DETROIT--Does issue press cards to members of the legitimate student press.

KANSAS CITY (Mo.)--Upon request by an authorized instructor or professor.

NEW ORLEANS--When it is determined that they met Department criteria.

PITTSBURGH--We treat student reporters the same (as paid newsmen.)

IRTS Plans Tape Exchange

The International Radio and Television Society has announced plans which involves taped interviews of industry officials for distribution to college radio station. More information will be provided in the February issue of JCR concerning this project.

Another project planned by IRTS is one in which broadcasting executives will seek to speak before meetings of community organizations in their home localities.

And a third offering is for a weekly evening forum in which 10 young members of IRTS and 10 nonmembers, who are in radio and television, will meet with three or four top broadcasting officials for no-holds-barred discussion on various industry problems.

LPB Inc. New Firm Name

It's now officially LPB Inc. Low Power Broadcast Company has changed its name to reflect it's expansion into the commercial broadcast field. LPB, one of the largest low power broadcasting producers is expanding into areas of broadcast consoles, turntables, limiters, as well as becoming a distributor for a full line of broadcast equipment. President Richard

Crompton said the company will continue to manufacture a complete line of carrier-current equipment which has been the mainstay of LPB for many years.

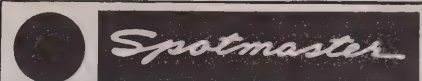
FCC Form Change Asked

The Center for Continuing Medical Education of the Ohio State University College of Medicine has requested revision of Section IV of FCC forms 340 and 342 so as to require applicants for non-commercial educational television stations to show how the issues, needs, and interests of the community have been ascertained and what proposed broadcast matter will meet those issues, needs, and interests.

The petition for rulemaking was filed by Sandra W. Bennett, Ph.D., Director, Research and Development.

WXCU Airs Legislature

WXC(FM), Northwest Missouri State College in Maryville, recently presented an unprecedented four-and-a-half-hour live broadcast of a Missouri State Legislative Judicial Committee Hearing. The Hearing was the first in Missouri to be held away from the Capitol in an effort "to take the State government to the people."



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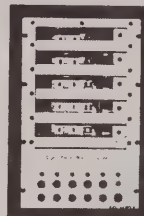


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Record-play & play-back models, compact & rack-mounted

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Versatile Five-Spot

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Tape Cartridge Racks

- ☐ Telephone answering accessory
- ☐ Replacement tape heads
- ☐ Adjustable head brackets
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- ☐ Tape tags
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The nation's leader in cartridge tape technology can fill your every need, quickly and economically. That's how we became the leader. Write:

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GATES
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Engineering

(Continued from page 13)

points, typically about 4 dB. Thus removing a transmitter for maintenance will raise the modulation level in the others. Equalizer adjustments will interact somewhat. The multipoint nonequalized loop does not allow easy selective remote control of transmitters, which may be useful in radiation surveys. However, its economic advantage is quite large.

Figure 11 gives suggested bridging arrangements for feeding a number of loops. Although the bridge loss is fairly high (18 dB for eight legs), most limiters have enough output to serve well. The bridge loss makes it possible to reduce or remove the 6-dB pad in the limiter to get more output. The bridge for nonequalized loops includes a DC feeding arrangement for remote power control.

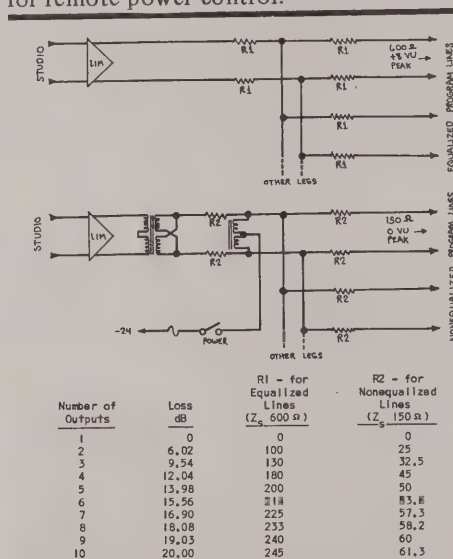


FIG. 11. MULTILINE BRIDGES

DC power control is possible by using the "simplex" circuit of Figure 12 with a ground return. The "composite" arrangement provides a second DC path for remote metering of the transmitter output. The DC power should be held to less than 50 volts, and the short-circuit current must be limited to less than 350 mA on Telco facilities. To minimize electrolytic corrosion of ground rods and other buried metal objects, hold the current to a minimum. 25 mA is usually adequate for 24-volt relays.

The simplex and "phantom" techniques are usable for deriving additional audio channels on station-owned audio cables. Because their crosstalk coupling is about 20 dB worse than from one pair to

another, they should not be used on Telco loops. The simplex path, being ground-return, is always noisy but works fine for a magneto order wire to a remote site while the remote comes in on the main path. The phantom circuit, being all-metallic, is fairly quiet. The phantom can be simplexed further to provide one noisy order wire, one fair audio channel, and two good audio paths, all on two pairs.

Details on two campus-wide audio networks installed by stations are available in Section 54.10 of the *Master Handbook* and in [19].

Dialed-up Remotes. The rising costs of program loops have brought about a great deal of interest in using the dial telephone network for remotes. At the same time, interconnection devices are available from the telephone company to replace various unofficial phone-patch schemes. In many cases a dial-up remote line provides acceptable fidelity at a substantially reduced cost.

The simplest and cheapest device is sold by the Bell companies as "Voice Connecting Arrangement QKT." It provides an isolation transformer and an overload clipper. The associated business-rate telephone set is left off-hook to hold the connection. With a QKT at each end, plus a push-to-talk handset, the cost is very reasonable. Each QKT costs about 50 cents per month.

At the receiving end the standard recorder connector, "Voice Connecting Arrangement RCZ," is also usable. It too depends on the associated telephone being off-hook to hold the connection. The telephone company can set up the connector so as to send beeps only out on the telephone line, not toward the receiving studio.

(Continued on next page)

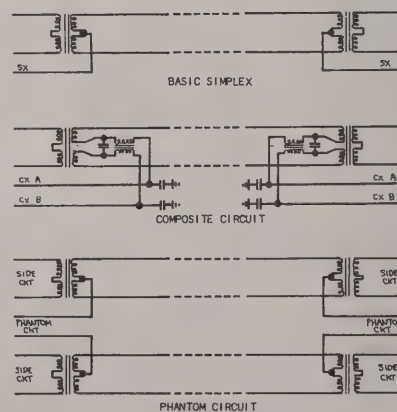


FIG. 12.

Another arrangement, coded STC, allows use of station-provided telephone sets in addition to connection to a studio console. Its higher cost makes it attractive largely as a permanent installation in the studios rather than at the originating end. It repeats ringing voltage and dial pulses, and can be used with home-built key systems and intercoms.

Dialed-up connections vary in quality with the distance covered. Between two PBX extensions on the same campus the response is quite good, being limited only by the series DC-blocking capacitors in the PBX at low frequencies and a gradual roll off at the high end. The same is true on calls from one outside phone to another with the same prefix if the subscriber loops are both nonloaded, that is, shorter than about 18,000 feet. With longer loops or on long interoffice trunks, the response falls off fast above 3200 Hz. On calls over a few miles, multichannel carrier systems with sharply limited response are always in evidence. Calls through PBX tie lines act like regular dialed calls. Figure 13 shows the typical loss of a cross-campus PBX call, a short call across town, a 30-mile outside call, a 180-mile tie trunk call through three PBXs, and a 2000-mile outside call [20], [21].

It is always necessary for the parties using the telephone to be aware that their conversation is being recorded or broadcast. Recording without the user's knowledge has always been unlawful.

It is important not to drive the telephone line at excessive levels. 0 dBm on peaks is proper, giving the right average power (-13 dBm) to avoid cross-talk and

intermodulation. Higher levels will cause clipping in the interconnection device and also in certain short-haul carrier systems.

Radio Remotes and Studio-to-Transmitter Links ("Auxiliary Broadcast Services"). Some stations use radio for their program lines instead of wire lines. Where the necessary capital to pay for equipment is available, this is frequently an economic choice. It certainly lends flexibility to remote operations.

Remote pickup stations are covered under Part 74, Subpart D, of the FCC Rules. Frequencies are (theoretically) available in the following frequency bands:

1.605 -	1.715 MHz
26.10 -	26.48
161.625 -	161.775
166.0 -	166.5
169.9 -	170.4
450.0 -	451.0
455.0 -	456.0

The 160-MHz region seems to be the most popular for a variety of reasons. The 1.6-MHz band is for AM; the others may be AM or FM.

Studio-to-transmitter links and intercity relay services (in areas where common carriers do not have facilities) are covered in Part 74, Subpart D.

Nineteen channels are available in the 942.0- to 952.0-MHz region for 400-kHz wide FM. In crowded metropolitan areas where frequencies are scarce it is common practice to derive stereo STLs by using two transmitters and receivers on the same frequency but with different polarization.

See references on page 23

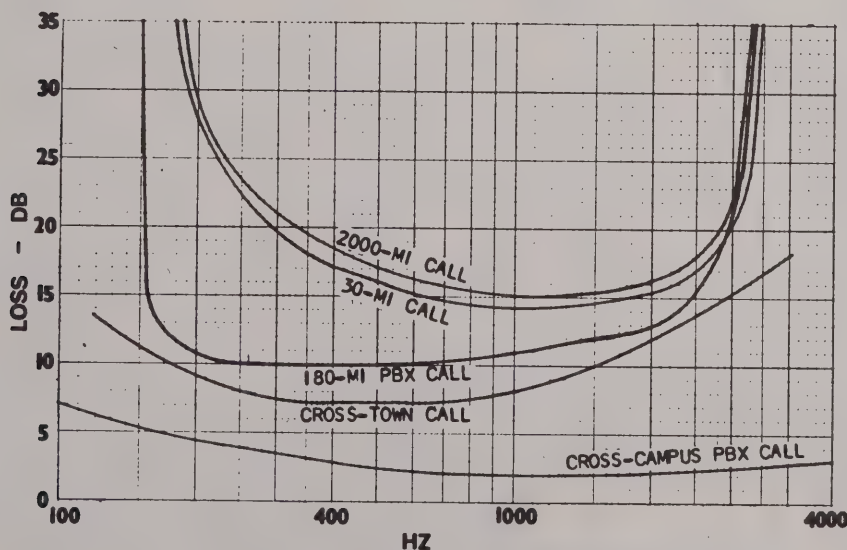


FIG. 13 - DIALED CONNECTIONS

Scala



Model CL 26 & CL 713 • VHF TV Channels 2-13

Applications • VHF TV pick-up & transmitting
CATV • Commercial off-the-air monitoring

- **A frequency-independent array** designed to meet the most exacting requirements of VHF TV pick-up antennas.

- **Excellent color response.** Careful design and exhaustive quality control guarantee that the gain will be held to less than 1/2db throughout the channel.

- **High gain:** Unique combination of double boom and flexible transmission line makes it possible to take advantage of larger active regions, resulting in more efficiency. Model CL26 covers channels 2-6 with gain exceeding 10 1/2db over isotropic source. CL713 covers channel 7-13, with gain exceeding 11db over isotropic source.

- **Lower tower load:** Two models cover all 12 VHF TV channels, providing a coverage equal to or exceeding that of a dozen 5-element single-channel yagis.

- **Co-channel rejection** is possible because the Scala Color Log has a minimum of side lobes and a very high front-to-back ratio. Special arrays can be designed to solve additional co-channel problems.

- **Thoroughly tested:** This product is the result of two years of research; and before release to the CATV industry, 24 Color Logs were field-tested (for a full year) nationwide.

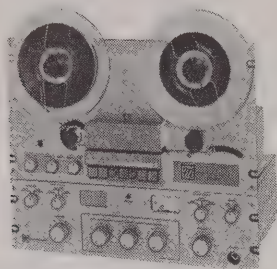
- **Extremely rugged:** Booms are 2" x 2" square 6061-T6 aluminum tube. Elements are 3/4" OD tubing laminated over 5/8" tubing, fastened to boom with 1/2" studs locked in position with 1/2" lock nuts. Fastenings are stainless steel. Scala Color Logs are fastened to tower at the balance point, not on an end, where a small load on the opposite end can cause an extreme load to tower and mounting brackets.

- **Experience:** Scala developed the first professional CATV antenna. The third CATV system in the country is still using its original Scala Yagis.

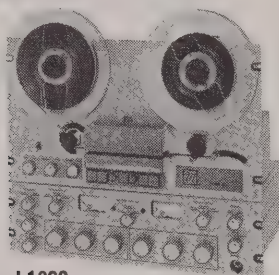
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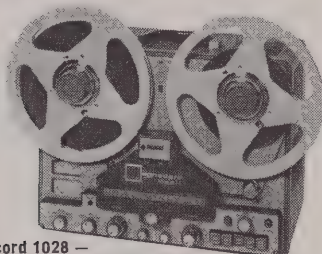
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CHOICE
TAPE EQUIPMENT
SO YOU CAN BE
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Magnecord 1021 —
Single Channel Recorder



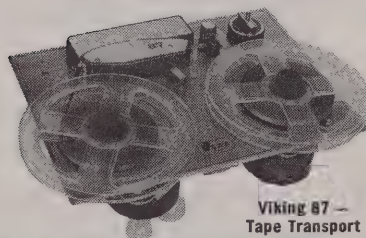
Magnecord 1022 —
Two Channel Recorder



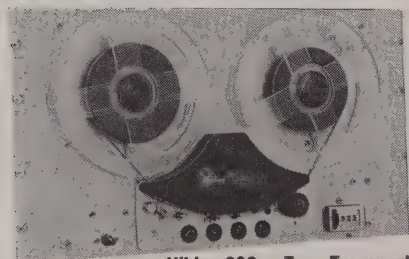
Magnecord 1028 —
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Viking 230 — Tape Transport



KTIS AM/FM Stereo
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Engineering

(Continued from page 21)

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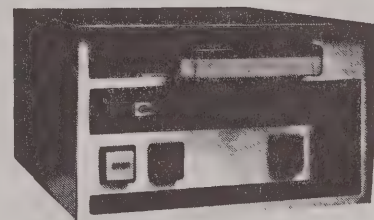
I saw ad in

No. in party

Arriving

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Only 8½ inches wide.



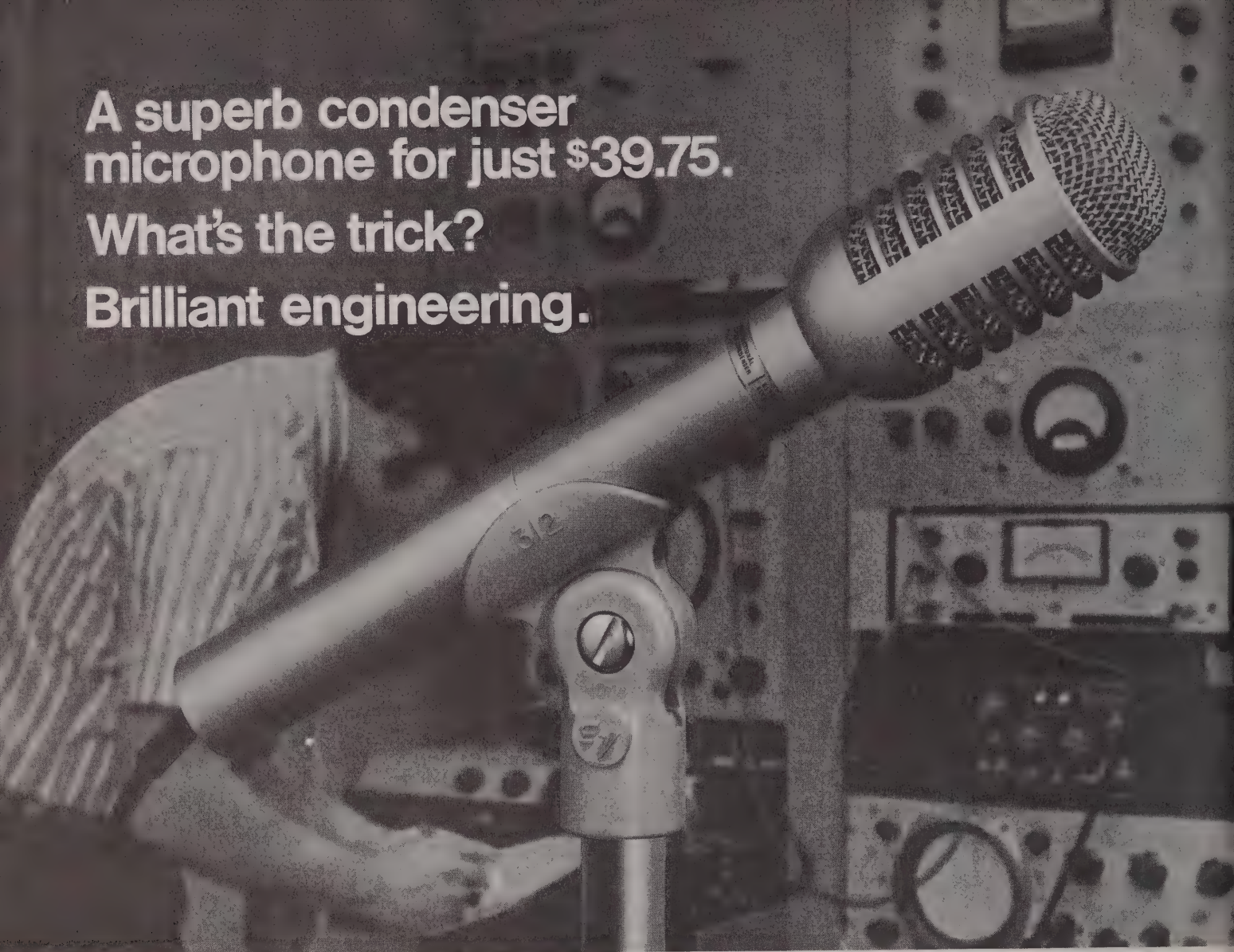
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The Compact Criterion, developed for crowded control rooms, retains the features that made the Criterion tape cartridge system the industry standard for excellence. New features include: single-card electronics for mono or stereo units, air-damped solenoid for whisper quiet operation and optional high-speed cueing.

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A big problem with conventional condenser microphones has been the need for a high voltage power supply to polarize the diaphragm. E-V has eliminated it completely with its new *electret* condensers. We've found a way to permanently trap this voltage right on the surface of the diaphragm, thus doing away with the need for bulky, expensive power supplies.

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Letters to the Editor...

Editor:

I read with great interest your comments in the October issue of your magazine, regarding Free Form radio. I feel I am quite qualified to speak to the issue, as I was one of those people that instituted the KFMG format, while I served as Production Manager.

You have a very narrow understanding of the term "Free Form". You cast great doubt on whether the format will work. Well, it did work, in fact well enough for the station to receive thousands of phone calls when the format was changed. (It has since been changed back, by the way.)

Well, what is free form anyway. In a nutshell, it is anti-snobbery. It is an attempt to let a station decide what is best for a market, rather than a Billboard or Cashbox executive. And that concept, my friend, is exactly what the FCC had in mind in its community service clause. Free form is not abandonment of responsibility, it is accepting it. Is it responsible to let New York and Hollywood executives decide the programming for a station? Is it in the public interest for a station to play the same "hits" over and over again. That certainly isn't my concept of radio, nor is it the concept implied in the Communications Act. Radio should expand the listeners horizons, present him with new input, and let him make his own choices. Free form does just that, presenting many kinds of music without regard for superficial formats that have artificially been set up to "protect" listeners. And those formats that have had a stranglehold on the industry for years, are finally, thank goodness, beginning to die away. Joan Baez, once thought of as an artist for "folk types" has a wider popularity. Chicago can be heard on the progressive or underground station, as well as the MORs. Such trends hardly make "free form" seem "doomed to extinction" as you imply. Quite the contrary.

You say in your article that "free form" cannot mold these factors into a single,

workable format". Well, that is the point. Formats have transformed radio into a tired, dead, intellectually unappealing mess.

Licensee responsibility? I believe in it. If stations began taking it, there would be far more free form on the air today, and a hell of a lot fewer bland radio stations, on campus and off.

Since we've converted to free form, our audience has reacted enthusiastically to the change. Interest has been aroused all over northwestern Ohio in Blues, Classical, Jazz and other forms of musical expression that Bobby Sherman never dreamed existed.

Sincerely,

Mel Martin, Program Director
WBGU-FM Radio, Bowling Green St. Univ.
Bowling, Green, Ohio

Editor:

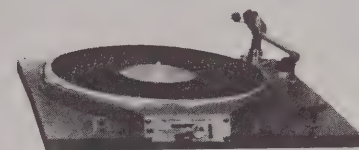
We are sure that the rest of the stations in the system have been bombarded from all sides as we have with contentions and counter contentions from the "action committee" to "serve college radio" and the IBS. All of the legal proceedings of which we are also sure you are aware of are now culminating in a ballot to elect the board of directors for IBS. Under the court judgement, member stations have been given the right to submit counter nominations to the slate of the nominating committee. KMOE has seen fit to do just that, nominating two men who are eminently qualified to represent college broadcasting. Their biographies will appear in full on the ballot and so we will not detail them at this time.

However, we felt that "counter nominations" is an emotionally loaded term, and since this term will appear on the ballot and the nominees of member stations will be designated as "counter nominees", we wish to make our position clear. In making counter nominations, KMOE is not subscribing to the position taken by the "action committee". The counter nominations come as a result of our feeling that the board of directors at IBS needs to be revitalized with younger, more involved members and with members who represent a broader constituency of campus radio stations. We urge all of our colleagues to seriously weigh the qualifications of both the nominees of the nominating committee and the "counter nominations" of the members of the system.

Steven W. Rahn
Station Manager, KMOE
Central Methodist College

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Letters To Editor

Editor:

I am a student at Lehigh University and Program Director of one of our two campus stations, WLVR. My most recent articles have been published in Billboard and College Radio Report.

In your latest issue (Vol. 9, No. 2) I noticed that your Publisher's Report had some rather unkind remarks about the "Free Form" format as adapted to College Radio.

I have been Program Director of WLVR for over 3 years now, and have been quite successful, I feel, in adapting a Progressive/Free Form format to our station. Indications are that all parties concerned, staff, administrators and listeners are very pleased with our programming.

As Program Director of an I.B.S. station I would very much like to write an article for the Journal detailing what procedure I followed in introducing a Progressive format to WLVR, how I went about it, and why. I would do all this with a view toward helping my fellow Program Directors in College Radio to perhaps improve their own operations. The article could range anywhere from 1500 to 2000 words, depending on your space requirements. Pictures, of course, are available to your specifications.

The article would be submitted on speculation, and will incorporate any suggestions you may offer.

A James Cameron
Program Director, WLVR
Lehigh University

Editor's Note:

Mr. Cameron's article is welcome and a letter has been sent saying such. All program directors are welcome to submit articles detailing how various formats work at different stations.



IBS Holds Engineering Conference In California

An all-engineering conference sponsored by IBS took place on October 16. KZSU Radio at Stanford University provided facilities for the meeting. A total of 34 attendees came from 14 stations in California to hear a variety of topics of particular interest to engineers at student-operated stations. Mark Lawrence of KZSU discussed techniques for do-it-yourself FM applications. Michael Bloom of KCSB-FM spoke of some of the political problems involved in expanding an FM operation, difficulties that can overshadow any engineering considerations. David Borst of IBS reported on current nationwide activities within the System. Seth Neumann brought up some useful administrative tips that he has developed at KZSU, techniques for dealing with the college power structure in engineering matters. Ludwell Sibley of IBS gave a description of new developments in carrier-current transmission, including a comparison of the economics of multi-transmitter versus clustered operation, and related several techniques for cutting the cost of going FM. Ken Brewer of KCSC reported on his station's successful venture into cable FM via the local CATV company.

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MEMBERS Service Report

The beginning of 1972 is also the beginning of the Intercollegiate Broadcasting System's 32 year of service to college radio. It all began when a couple of Junior Marconi's established the "Brown Network" by interconnecting the output of several radio receivers in a dormitory to enable the students to hear classical recordings. The two students, George Abraham and David Borst, later assembled representatives from nine other colleges and universities to discuss ways of increasing their audience. The meeting resulted in the creation of the Intercollegiate Broadcasting System.

Today, IBS has grown from the original charter members to an international organization of some 400 active affiliated radio stations.

The day to day operations of IBS are handled by undergraduate students of various universities across the United States, and broader decisions are made by a non-paid board of directors. This board is elected by the membership having voting status in the System.

Some of the services offered member stations are listed at right:

JOURNAL OF COLLEGE RADIO — published monthly during the school year. Every member gets six copies for the staff. National college radio promotion — to magazines, advertisers, government, etc.

Conventions — (National and Regional) to exchange ideas and plans.

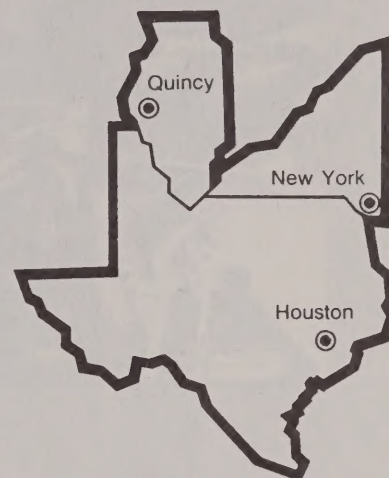
JOURNAL OF COLLEGE RADIO ANNUAL — A directory of college radio stations describing their facilities, services, formats, personnel, and rates.

Other services include the IBS Master Handbook, consulting services, publicity aids, placement service, engineering consultation service, FCC representation, tape program series, music license clearance, office forms, and a national honorary broadcasting fraternity—IOTA BETA SIGMA.

One of the latest projects of the association is a search for participants and support for new programs on Minority Groups and the White Backlash. Also under study are public service and religious programs.

Future plans for IBS look great, but remember, an association is only as good as the participation of its members. Become involved in your association.

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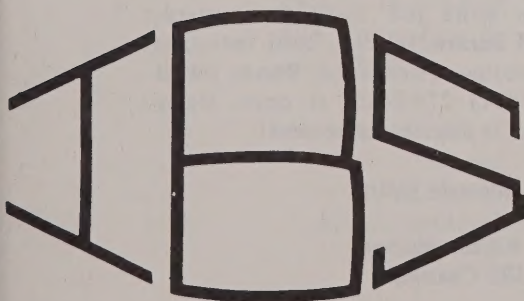


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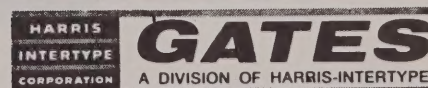
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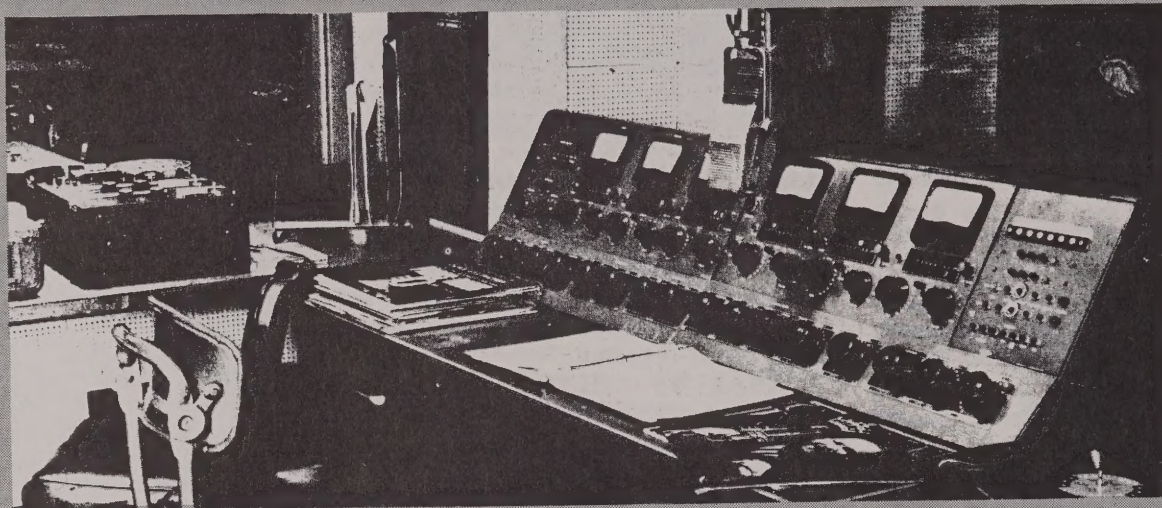
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EDITORIAL

To the Full Member Stations of the Inter-collegiate Broadcasting System:

In mid-November new ballots for the election of a Board of Directors for the 1971-72 school year were mailed out by the System's assistant secretary, Skip Barlow, to all voting member stations as of September 27, 1971. The ballot contains not only the nineteen names submitted by the nominating committee chaired by Jim Nelson but a large field of additional nominees.

Voting members are to cast their votes for not less than seven (7) nor more than nineteen (19) nominees. Ballots must be postmarked not later than 12 p.m., January 7, 1972.

I cannot stress the importance of each voting member's returning a ballot. Your station's self-interest in the System would be best-served by the station's participating in the election of the members to the

policy-making body of the System. That's obvious.

But there's one aspect of the prescribed procedure that may not be so obvious. A default in voting may result in your station's ballot being cast for it by a regional director *pro tem* it's never heard of, let alone designated to cast its vote in its stead, for certain nominees it has no confidence in.

If your station's ballot has been misplaced or if you have additional questions about the election procedure, please telephone or write IBS' assistant secretary, Herbert B. Barlow, Jr., Esq., 2005 Industrial Trust Building, Providence, Rhode Island 02903, (401) 274-9495, at once. Delay may result in disenfranchisement!

Sincerely yours,

William Malone
IBS Chairman



They learn from the best combo* on campus

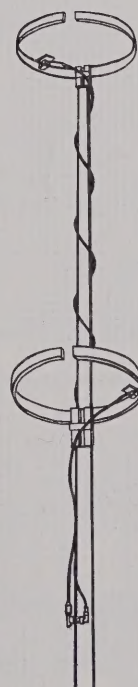
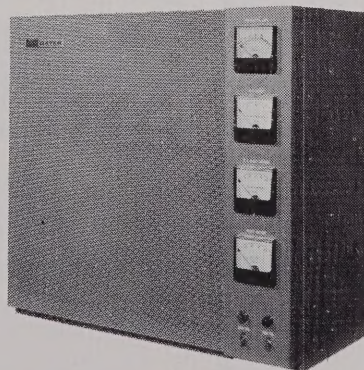
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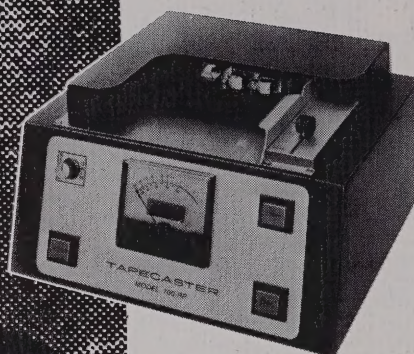


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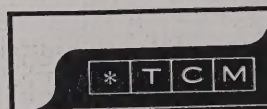
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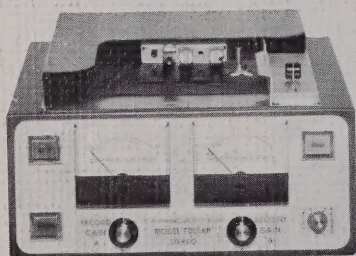


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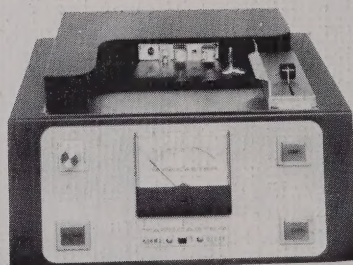


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